FLIGHT

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

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EDITORIAL COMMENT.

The Paris Aero Show.

Frankly, the fifth International Aero Show in the Paris Grand Palais has turned out to be a somewhat disappointing affair. We have for so long been accustomed to look to the French constructor of aircraft for a lead in development, that it comes rather as a shock to find that he has nothing new to show us; that his exhibition is international only in name; and that, in a word, the science of aeroplane design would almost appear to have reached its limit so far as France is concerned. Naturally, we use this latter phrase in a figurative sense, for we know full well that we are, comparatively speaking, ages away from finality in the matter of aeroplane design, but the fact remains that so far as the lessons of the present Paris Show are concerned, the one that is most impressive is that which appears to demonstrate that, for the moment at least, evolution is stagnant on the other side of the Channel. Indeed, when we compare the progress which has been made during the twelve months which have elapsed since the last Show, we cannot help the feeling that, unless France wakes up, she will before very long lose her pride of place as the foremost nation in matters affecting aviation. Unless our observation is very much at fault, far more progress has been made in England during the past year than is observable in the designs submitted for public inspection at the Grand Palais.

Unfortunately, the Show is so little international in character—the only foreign firm exhibiting is the Bristol Co.—that it is impossible to compare designs internationally, so to say, and we are thus left to outside impressions on which to form a judgment of relative progress. However, that judgment is as we have said, and we think it will be endorsed by every serious observer who has crossed for the purpose of noting the progress of our French friends. The pity of it is that it is not as though we ourselves had achieved much that is remarkable, but that while we have undoubtedly progressed quite substantially, the French constructor seems to have been marking time.

So far as the Show as a thing of beauty is concerned, it is a really fine spectacle, far surpassing in its artistry of conception anything that we have been able to do at Olympia. True, the Grand Palais lends itself to decorative effect far better than any building we have in this country, but all things being equal, it must be admitted that the French are our masters in the art of making their exhibitions spectacularly attractive. The scheme of the current Show is to show the aircraft just as though they had landed on the grass, with the open sky above, and wonderfully well the idea has been carried out. In fact, the *mise en scene* is as near perfect as can be imagined, and the whole vista of the building presents a singularly beautiful aspect. But decorations are not aeroplanes, nor do flower-bordered *parterres* compensate for lack of novelty in design, and we are not impressed with the idea that this sort of thing does more than attract gate money. The industry is not advanced one jot by it.

Disappointing as the Show is as a whole, it would be quite misleading to say that no advance at all is manifested. For example, in consequence of the preference shown by the French military authorities for steel tube as a substitute for wood in the construction of the *fuselage*, we find that most of the prominent makers are exhibiting machines in which this form of construction is used. Even Blériot has had to come into line in this respect, and the new biplane bearing his name is, as our readers already know, steel-built. This, however, can hardly be regarded as a remarkable advance in practice—it has nothing of particular novelty about it. It seems to us that the industry in France is fast approaching a time of crisis, if, indeed, it is not already passing through the early stages of that form of malady—if it can be called so. The modified policy of the Government in its relations with the

leading constructors, must almost of necessity have left the latter wondering where they are, and whither things are trending. To judge from what has transpired, it almost seems as though the Government had begun upon a policy of allowing the smaller concerns to die of starvation—to mete out the same treatment with which our own people are so unfortunately familiar. The announcement that the great Creusot firm is to enter upon the construction of aeroplanes is significant of the drift of things, and is not without its parallel in this country. If it means anything at all, it surely means that the policy of the French Government is to encourage the great armament firms to come into the aeroplane industry, which, with their immense resources of capital and works, and with their experience of Government requirements they are, it must be admitted, eminently fitted to do. Once their immense resources have been properly adapted to the necessities of aerial defence, the need for the small constructor has manifestly disappeared, and he must take his choice between absorption by the big concerns, or of being dependent upon chance orders which may come his way from private individuals, with, perhaps, an odd Government commission thrown in if his machine happens to be one of more than average merit.

Although the aviator-sportsman is gradually being evolved, at present he does not seem much more common in France than on our own side of the Channel. Instead, there is being developed a class of prize-hunting professional airmen, magnificent pilots all of them, but scarcely a class which will make for the permanent good of the movement, for the obvious reason that if the line of development is as we have outlined, then as soon as the industry has begun a decided drift into the hands of the great armament firms, the prizes for which these men now compete will no longer be available, and thus the *raison d'être* of the class will gradually disappear. Taken on the whole, the immediate future of French aviation would not appear to be too rosy in its character.

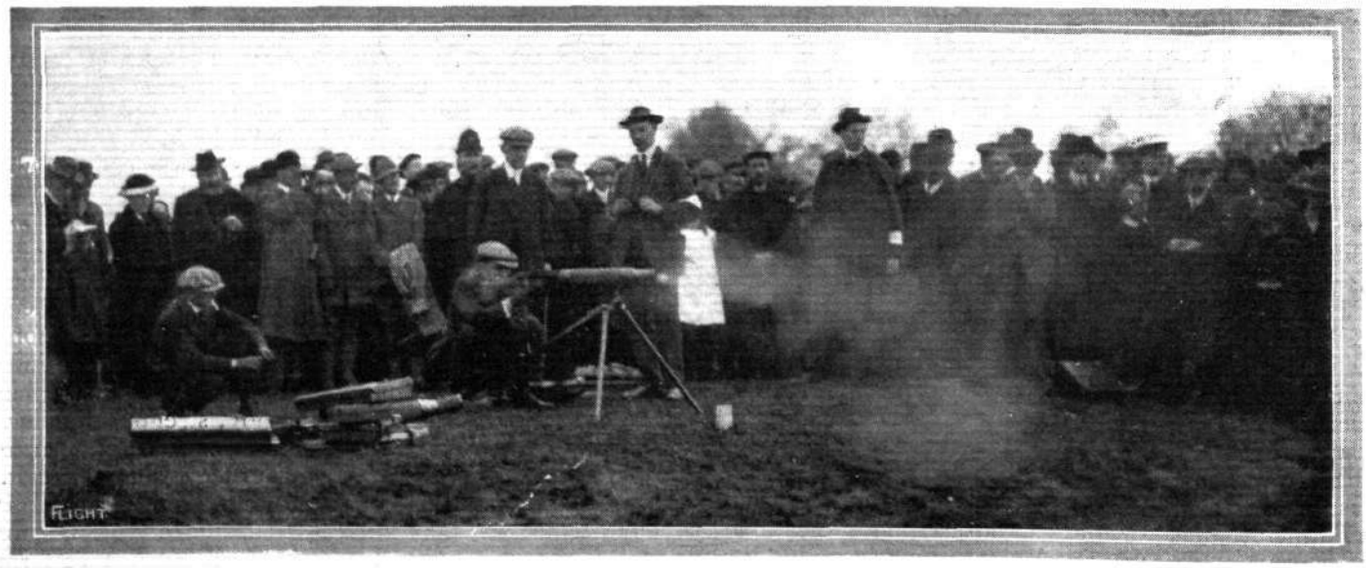
While we regret that there should have been shown so little in the way of real advance in design, in opposition to the undoubted improvement in finish and detail, because we are all for advance, no matter at whose hands, we cannot help something of pride to think that at last the British constructor has made up the leeway. There is not a doubt about it—the British designer is now fully capable of taking his own line, and taking it to such purpose, that he is quite up to, if not in front of his rivals. This is perhaps tall talk, but then we would point to the Bristol machine at the Show, which is admitted to be the best of its class, irrespective of nationality, whilst the Dunne biplane, although it happens to be French built, is one of the most talked of machines at the Salon. Moreover, the Paris Show is remarkably deficient in machines of the seaplane type, which is rather to be wondered at in the light of what took place at Monte Carlo last summer. Here again is a type in which we hold an undoubted lead, as indeed we should, since the type is one which is of far greater importance to Britain than the land machine. As a final reflection, we may be allowed to pride ourselves on this—that at Olympia next year there is not a doubt but that we shall be able to stage a better variety of machines, and machines which will not at all suffer by comparison as to the native product with the best that Paris has to show us now.

E. R. WHITEHOUSE.

PILOT.

HAILING from Sunderland, E. R. Whitehouse joined the Aeronautical Syndicate, Ltd., at Hendon, as a pupil in construction at the beginning of last year. Towards the end of the year he went to the Deperdussin school and qualified as a pilot on a 35 h.p. Deperdussin about the middle of January last. He continued to fly the small Deps. very successfully during the next three months, and then undertook to pilot the 50 h.p. Handley Page monoplane. At the beginning of June he commenced a three months' tour with this machine, and gave exhibition flights at Leicester, Mansfield, Lincoln, Hull, Beverley, Burton and Lurgan. At the end of August he carried out some tests with the White and Thompson biplane, which has a 100 h.p. A.B.C. engine; while since November 5th he has flown the 100 h.p. Anzani-engined Handley Page biplane.

"THE HAWK."



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THE LEWIS AUTOMATIC GUN TESTS AT BISLEY.—Just finishing the thousand rounds continuous firing at the 500 yds. range. Note the almost entire absence of smoke even after this severe test.

MEN OF MOMENT IN THE WORLD OF FLIGHT.

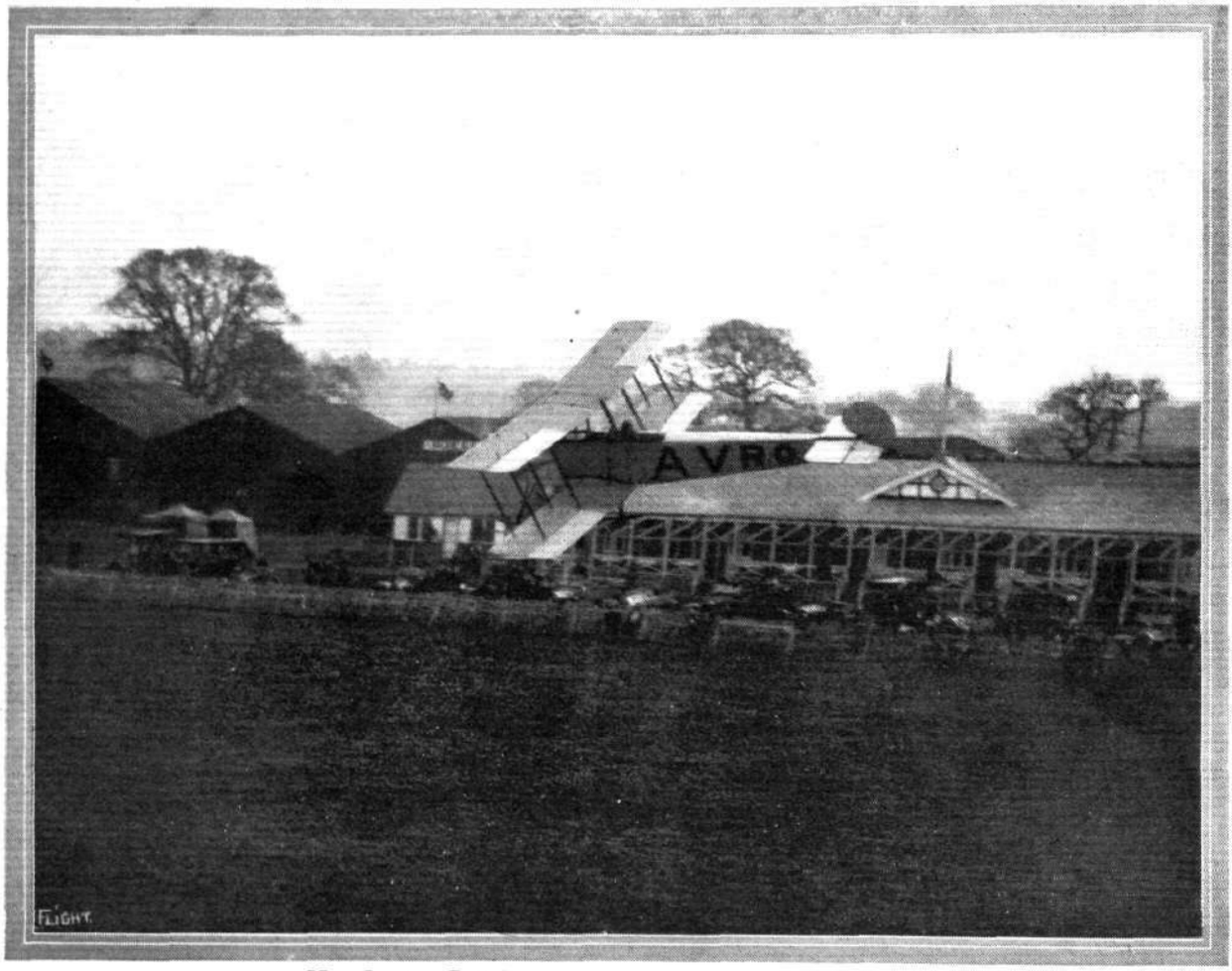
MR. E. R. WHITEHOUSE.

FLYING AT HENDON.

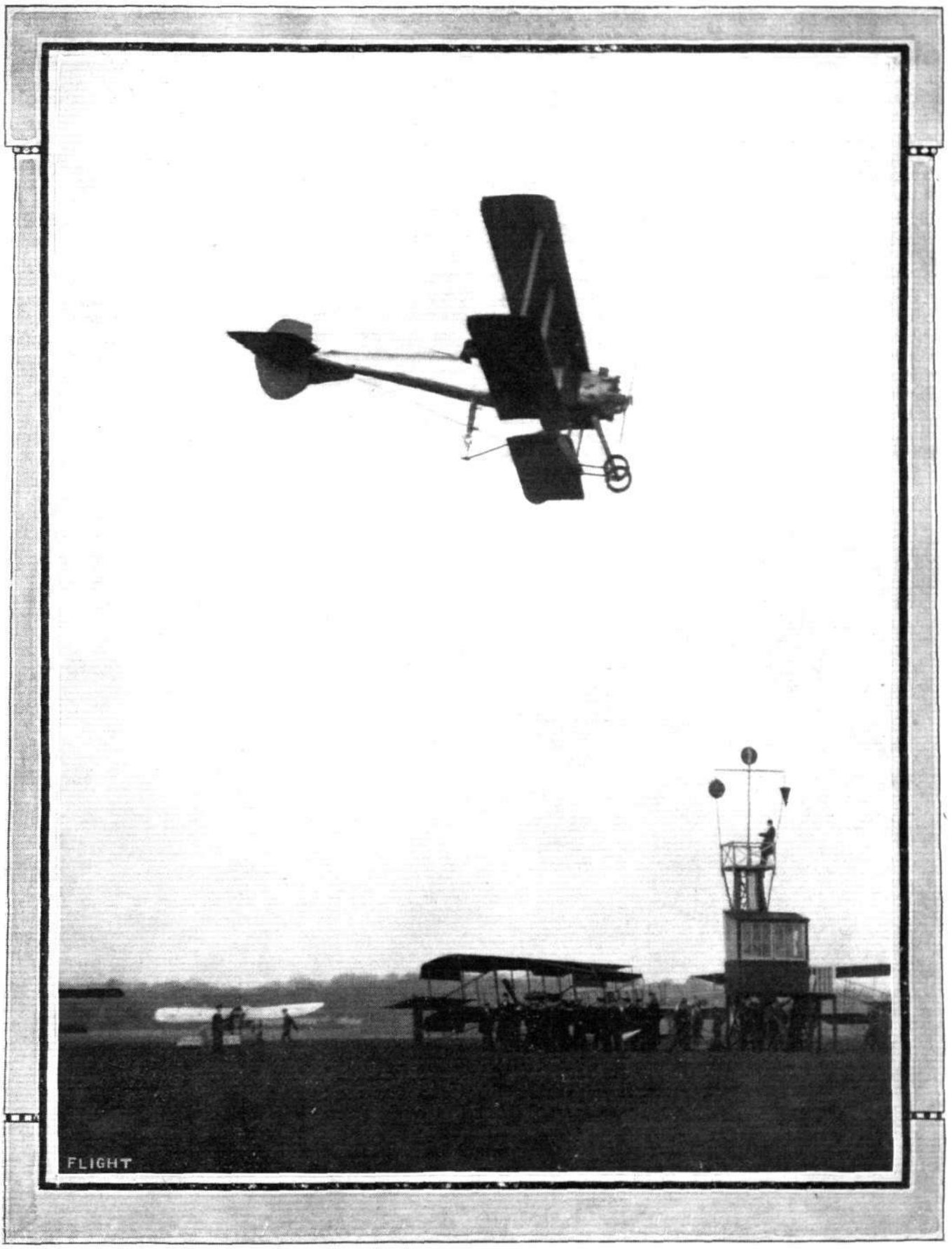
B. C. HUCKS repeated his looping the loop demonstrations on his 50 h.p. Blériot last week at Hendon, with even greater success than before, and under very unfavourable weather conditions. He has now performed these demonstrations under a variety of circumstances: in the clouds, with a badly-running engine, in a strong wind, which twisted the tail of his machine, in a gale of 50 m.p.h., and in the rain. His exhibitions on Saturday last, however, were by far the best he has ever given, for they were not only very neatly done, but were executed immediately in front of the enclosures, and very low down. In fact, the two bull's-eyes painted on the top of the main planes which serve to indicate when the machine is upside down—an excellent idea, much appreciated—were quite superfluous on this occasion.

On Thursday of last week the wind was blowing to such an extent that flying seemed to be out of the question, but knowing that practically nothing will stop them from flying up at Hendon, we dutifully made our way up to the aerodrome. Just about 1 o'clock a terrific gust blew down one of the large advertisement hoardings in Colindale Avenue, and we thought that this time our journey was to be in vain. But we were wrong, for a little later on W. L. Brock, accompanied by a mechanic, ascended on the 80 h.p. Blériot. He was violently jerked off the ground, and soon rose to a height of 1,000 ft., and then commenced to climb again, but the wind was so strong (60 m.p.h.) at this height that he rose very slowly, and at times remained almost stationary. After nearly 20 mins. of this he returned to earth, nearly frozen stiff with the cold. His passenger appeared to be very glad to get down again, for he jumped out of the machine immediately after it touched the ground. Brock having reported what it was like above, B. C. Hucks came out, but it was announced that he would only give an exhibition flight. He ascended to a height of about 1,800 ft., but could get no higher. At this height he executed some very fine bankings, some quite vertical, besides dives, descending in the meanwhile about 300 ft. He then made a steep dive terminating in a loop, after which he landed. He was then "exhibited" on the aerodrome car, and was loudly applauded. Hucks said he felt the cold so much that he could hardly manipulate the control, and the wind rendered his manœuvres very difficult. Shortly after this fine demonstration, Philippe Marty ascended on the 80 h.p. Blériot, and put up a splendid exhibition of wind-fighting in the dusk, and so brought a somewhat eventful day to a close.

Last Saturday was very unpleasant as far as the weather was concerned, for it was cold with drizzling rain. The Hendon pilots put up a very good show nevertheless, those making flights early in the afternoon including Claude Grahame-White, who took up the Duke of Manchester on the Maurice Farman, W. L. Brock on the 80 h.p. Blériot, Marcus D. Manton on the 50 h.p. G.-W. 'bus, E. Whitehouse on the 100 h.p. Anzani-Handley Page biplane, and Louis Noel on the Maurice Farman. The latter pilot carried out some interesting demonstrations of steep banking and side-slipping with the writer as passenger, the object in view being to prove some theories which both of us held in regard to the control of a machine under such conditions. At 3.40 p.m., B. C. Hucks, securely strapped in his seat, ascended on the Blériot, and after climbing for some time attained a height of nearly 1,000 ft. From this height he made one loop, followed by another one shortly after, which brought him to a height of about 600 ft. He then made a circuit of the aerodrome, climbing the meanwhile to his former height, where he made another loop, finishing up at 800 ft. This was followed up with a double loop at between 500 ft. and 400 ft. These last loops were made immediately in front of the enclosures, in the centre of the aerodrome. After completing the last loop he made a half-circuit, and indulged in a final and sensational loop at 300 ft. in front of the paddock. This last loop, which was his fiftieth, was undoubtedly the most wonderful of all, for apart from the low altitude at which it was executed, the machine remained for an appreciable time—perhaps two seconds—on its back at the top of the loop. Hucks did not land immediately after this loop, but completed several circuits of the aerodrome, switchbacking, banking, and flying low down along the enclosures, before he did so amid great applause. After Hucks' demonstrations some further exhibition and passenger flights were made by the various pilots. Sydney Pickles, with his leg still in plaster, watched Hucks from a car, and was much impressed with the looping.



Mr. Gordon Bell having a turn on the Avro at Hendon. "Flight" Copyright.



Mr. Norman Spratt flying the Bréguet biplane at Hendon aerodrome.

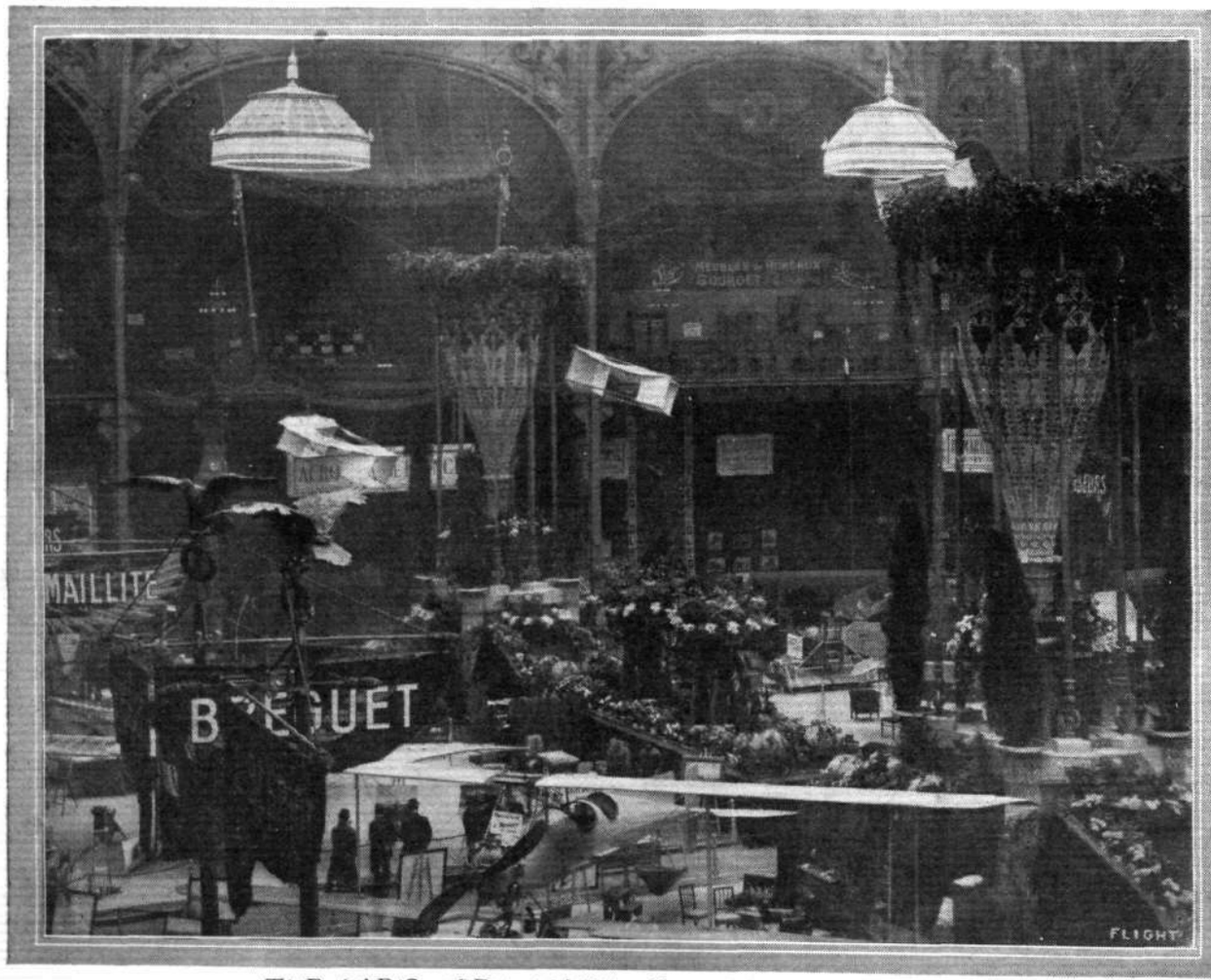
ARMCHAIR REFLECTIONS.

By THE DREAMER.

"Arabian Nights" Up-to-Date.

FATIMA! There is something about the word which is pleasing; it conjures up things of beauty and pleasures of youth—Oriental carpets and sherbet. My faith in Oriental carpets has been somewhat shaken of late years owing to the proximity of Birmingham, and I fear the Borough is about as far east as Persia, so far as sherbet is concerned. But Fatima! I really had faith in Fatima, till to-day. My "Arabian Nights" still finds a place on the book-shelf, but I shall never read it more. Fatima has become western—Fatima perhaps even wears hobble-skirts and Louis heeled shoes—Fatima has become up-to-date—she has eloped in an aeroplane! *The Star* says the name of her romantic youth is Mahmed Ali-Bey, and for this I tender her my humble thanks; if she had eloped with John Smith I should never have recovered. Mahmed Ali Bey, according to the *Daily Citizen* correspondent, is a major in the Turkish Army, and Fatima Hanum is the daughter of a wealthy financier.

So far, it is as Oriental as may be in these days, and if the gallant major had only used a camel, I could have figured them eloping in the beautiful dress of their country—but an aeroplane! I really cannot imagine Fatima in a Roold helmet and goggles, her beautiful face streaming with castor oil. The major, it appears, is young, handsome, courageous, but poor, and although he had won many decorations and crosses during the war, the financier would have none of him; a wealthy man only should marry his daughter. But Mahmed was resourceful—he would learn to fly, and fly away with his love to the very letter. Why on earth he did not fly in a taxi, goodness only knows; certainly it rather discounts the romance of the thing, I should imagine, to whisper love's sweet wooings whilst the beastly clock keeps ticking up 8*d.* a mile—it's so horribly commercial. Well, the major learned to fly at San Stefano, so the story goes, and, when all was ready, Fatima sped to the aerodrome in a fast motor car, hopped into the aeroplane in which her lover was waiting, and away to Adrianople. The story does not say whether her sisters waved handkerchiefs from the north tower, but no doubt it was so. In any case, I believe Fatima is the first Turkish woman to go up in an aeroplane, to say nothing of eloping in one, which is something of a record.



THE PARIS AERO SALON.—General view from the north. "Flight" Copyrigh..

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Ae.C.F. Proposes Big Waterplane Event.

THE Aero Club of France has been considering the possibility of organising a big event for hydro-aeroplanes next year, over a course from Dunkerque to Biarritz and following the French coast-line. It has referred the matter to the Chambre Syndicale des Industries Aeronautique, who, however, are not enthusiastic.

Russian Military Aviation.

IT is announced from St. Petersburg that the Military authorities have concluded a scheme for the provision of 400 aeroplanes during 1914. The machines are to be built by four works in Russia, one of which is under English control. It is also stated that Janoir has been engaged as a technical expert.

PARIS AERO SHOW.

IT must be admitted that, in contrast to previous Paris Shows, the first impressions gained on entering the Grand Palais have very little to do with aeroplanes. It is the decorations, which by their magnificence and lavishness, verging almost to prodigality, compel attention. Of late years the French Motor and Aero Shows have tended to become much more business-like in regard to their scheme of decorations, but for this Show, doubtless on account of the comparative scarcity of exhibits, there has been a return to the "atmosphere" of the former days. The setting of the present Show is typical of the thought and care in such things which may be looked for in an artistic nation, for although taking some of the items of the scheme singly, they would appear to be *outre*, yet when they are combined with the other parts it must be admitted that they produce a most wonderful and gorgeous effect. In the centre of the Grand Nef is a great fountain of flowers standing some 30 ft. high, and round it are ranged six stands, which are separated from each other by terraces of flowers, radiating from the plinth of the great floral fountain. Along the centre of the Grand Nef, three on each side of the central fountain, are arranged half a dozen giant Egyptian drinking cups, each overflowing with beautiful flowers, and running between each vase are stepped terraces of flowers. The scheme of illumination has also been very carefully devised, the main item consisting of twenty-two hanging lampshades of silk, which are lined with incandescent electric lamps, ranging in power from about 250 c.p. on the outside circle to 4 c.p. on the inside. The result of this graduated lighting is beautiful in the extreme.

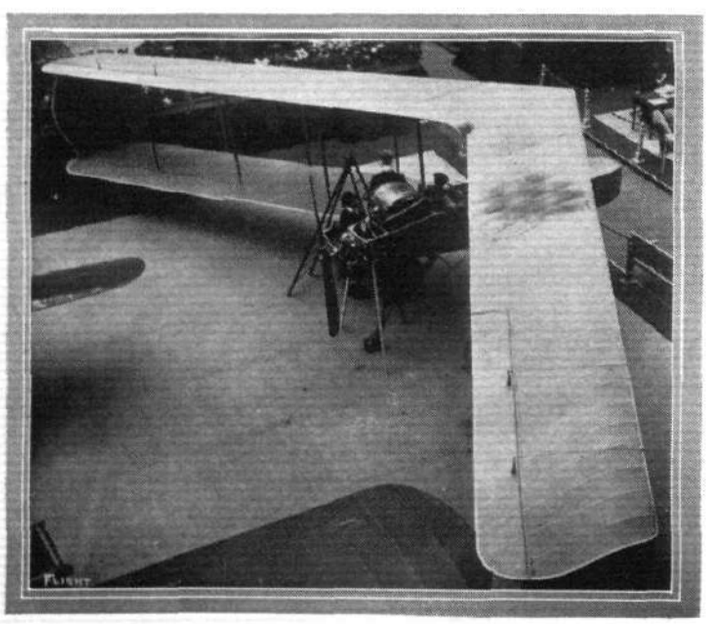
Turning to the exhibits, the first impression is that of disappointment at the scarcity of them, for the stands on which complete aeroplanes are exhibited number under a score. It must be admitted, however, that all the French makers who have, so to speak, "won their spurs" are represented, and there is a welcome absence of freaks. Owing to this state of affairs, there is no lack of room, and the Farman, Blériot, and Nieuport firms each have double stands. Although it is true that of the forty machines on view, considerably more than half are of the monoplane type, it is evident that, as a result of the favour with which it is regarded by the military authorities, the biplane is once more in the ascendant. Another influence which is being brought to bear by the requirements for military work is noticeable in the direction of the use of steel instead of wood in construction. The number of machines on which steel is employed for the chassis is far greater than those in which wood is used, while in several machines steel is utilised for the *fuselage*, wing-spars, elevator frame and rudder. Another important development in design is towards the simplification of the chassis for land machines, and many of the manufacturers are adopting the inverted "M" principle, after the style of that which is a characteristic feature of the Morane-Saulnier. For passenger-carrying

THE PARIS AERO SALON.—General view from the south. "Flight" Copyright.

The Bristol stand at the Paris Salon. "Flight" Copyright.

machines it seems that the tandem arrangement is being superseded by what is known as the "Sociable" or side-by-side method, whilst builders and designers are now paying a great deal more attention to the comfort of the pilot and passenger. Instead of the metal bucket seat which used to be deemed amply sufficient, it is quite usual now for seats to be fully upholstered so as to leave nothing to be desired in this respect. In the cockpits of a good many of the machines are to be seen all sorts of little conveniences, such as small cupboards for stowing away odds and ends, map holders, field-glass pockets, &c. In one case, at the feet of the observer is arranged an oval opening giving a very wide range of vision over the country, while there is a microphone fitted in such a position that the observer can carry on a conversation with the pilot without any inconvenience and without the necessity of holding any instruments.

Generally speaking, there is no marked departure from what might almost be called standard practice, and from the fact that even the lesser-known machines follow orthodox lines, and are well built, it is self-evident that they are meant to, and will, fly. Two machines which are a little out of the ordinary are the Morane-Saulnier "parasol," as it is called, in which the main plane is arranged some distance above the *fuselage*, as illustrated in FLIGHT some while ago, and the Henry Farman biplane, in which the lower plane is very small and quite close to the ground, while the *nacelle* is arranged right up against the top plane. The military element is not nearly so much in evidence as at the last Show, the Government this time not exhibiting any machines, but they help to fill the Grand Palais by occupying two stands with an instructive display of motor transport wagons, movable workshops, wireless equipment, man-lifting



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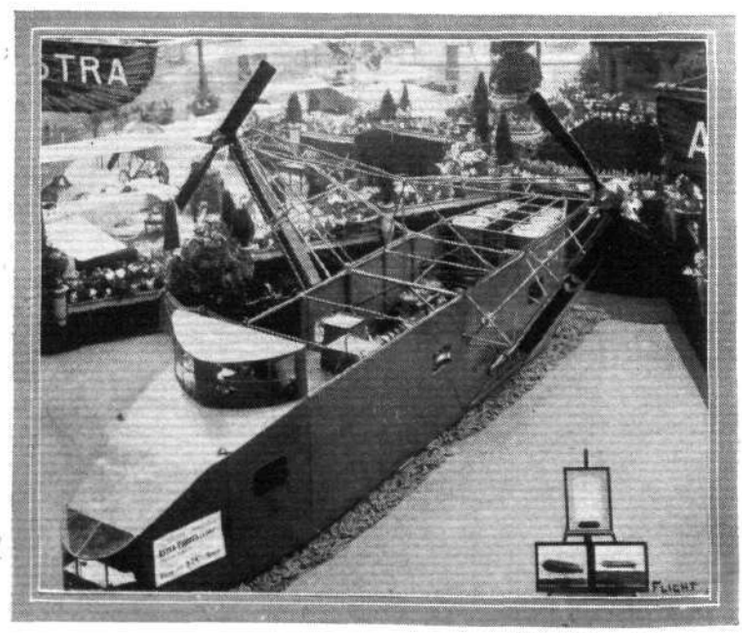
The Dunne machine on the Nieuport stand at the Paris Salon.



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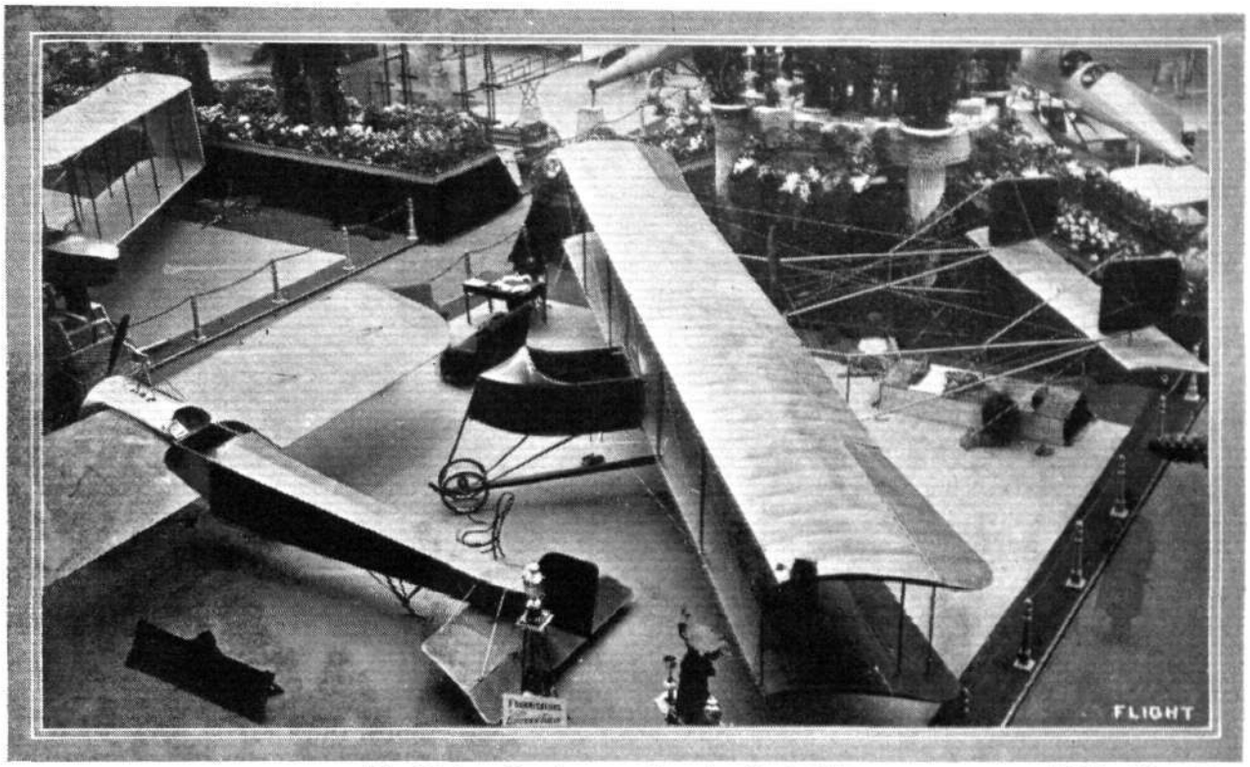
The *nacelle* of the "Astra Torres" airship at the Paris Salon.

kites, &c. On the Blériot stand there is a monoplane specially built for military scouting, which is armour-plated, while on the Nieuport and Borel stands are to be seen monoplanes embellished with a Hotchkiss gun. The number of machines arranged for work from and above the water is not very large, and a development towards the production of a really efficient seaplane is not very pronounced. The Bristol machine is the only one fitted with a bomb-dropping device, and a very clever arrangement it is, Mr. Coanda having given a great deal of time and thought to the working out of details.

Although the exhibition is international in name, it is not a great deal so in effect. The only British-built machine at the Show is the Bristol, while the Nieuport firm show a French-built Dunne, and the Franco-British Aviation Co., Ltd., the "F.B.A.," the latest development of the Donnet-Leveque flying boat. Apart from the exhibits of actual flying machines, there are a good many other things to interest the visitor in the galleries and balconies in the way of engines, propellers, dopes, &c., while the sportsman who may not be inclined to venture into the "central blue" may be interested in the hydroplanes with aerial propellers or the "aeroplages."

The interest taken by the French Government in the exhibition was manifested by the opening ceremony being performed by the President, M. Raymond Poincaré, who was accompanied by the Ministers of War, Marine, and Public Works. The Presidential party spent three-quarters of an hour in a tour of the exhibition, special interest being taken in the exhibit of the British and Colonial Aeroplane Co. Below follow a few details regarding the various stands :—



The Bathiat-Sanchez stand at the Paris Salon. "Flight" Copyright.

THE STANDS AT THE PARIS AERO SHOW.

BRISTOL.

AGAIN, this year, the only firm to represent Great Britain is the British and Colonial Aeroplane Company, who are showing a two-seater tandem military tractor biplane, fitted with an 80 h.p. Gnome engine, driving a Bristol propeller of very novel design, which has the inner part of the blades of streamline section, so that evidently the propulsion effect is obtained by the outer portion of the blades only. Some interesting fittings are to be seen on this machine, one being a pair of sights, by means of which the machine may be kept on a certain course when headed for a landmark such as a church tower. Another very interesting fitting is a new bomb-dropping device, invented by Mr. Coanda. This device, which is situated under the *fuselage* and observer's seat, contains 12 bombs, which may be dropped at any desired interval, by means of a hand lever in the observer's cockpit. Needless to say the workmanship is up to the usual high "Bristol" standard, which compares very favourably with that seen on French machines.

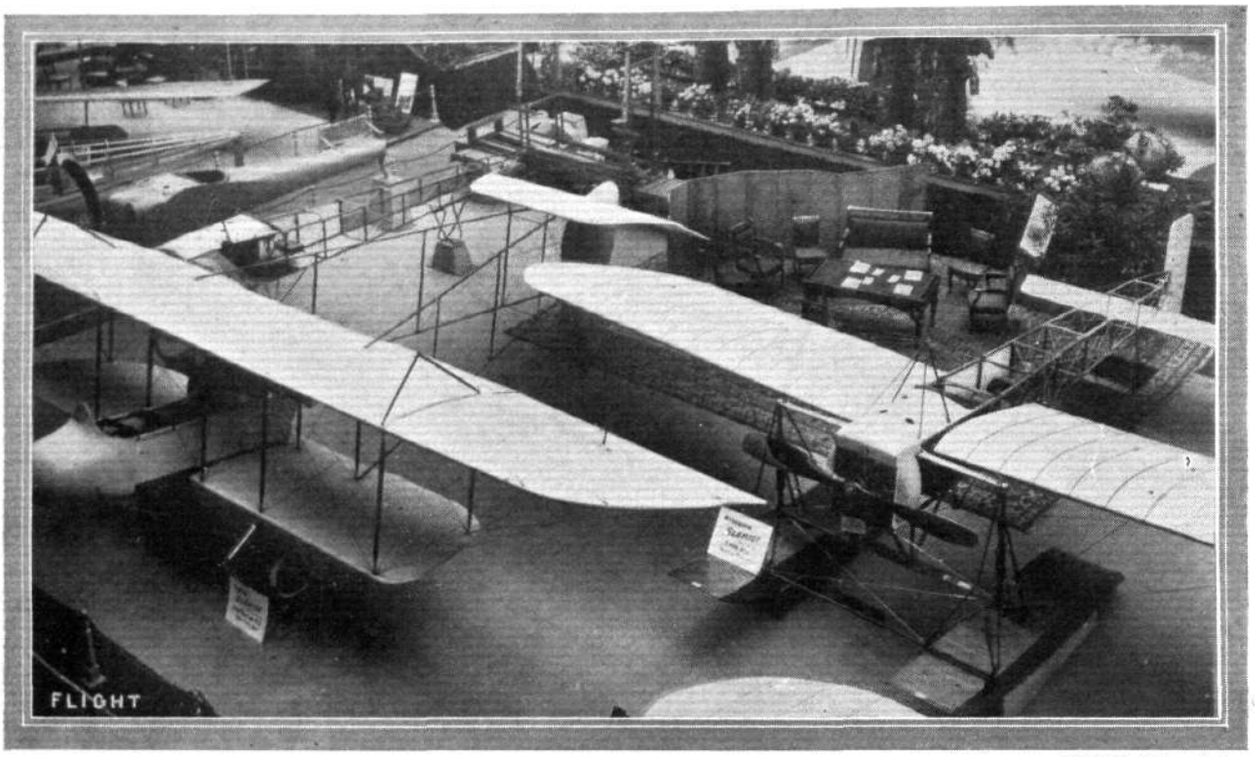
NIEUPORT DUNNE

The Nieuport firm are represented by four monoplanes and a biplane, the latter being a French-built Dunne biplane, which machines, it will be remembered, are now constructed in France by the Nieuport firm. In its general arrangement this machine is similar to the British-built Dunne biplanes, but one alteration which, we think, must be considered an improvement was noticeable. We refer to the chassis, which is of an entirely new and very simplified form ; in fact, one is inclined to think that the other extreme has almost been reached, for whilst the British-built machines were fitted with a very complicated chassis, this structure has in the French machine been simplified to a degree that makes one question its efficiency. Not the least interesting of the monoplanes shown is the actual machine flown by Helen in his famous flights for the Coupe Michelin, in which he covered officially 16,046 kiloms. 600 metres, while the actual distance covered on these flights in thirty-nine consecutive days is claimed by the firm to be over 21,000 kiloms.

The machine, although naturally slightly dirty, does not appear to be any the worse for wear, and is the best proof one could have of the excellence of the Nieuport workmanship.

BATHIAT-SANCHEZ.

Two machines are exhibited on the Bathiat-Sanchez stand; one is the monoplane on which Lieut. Morel made a tour of France, and the other is an all-steel

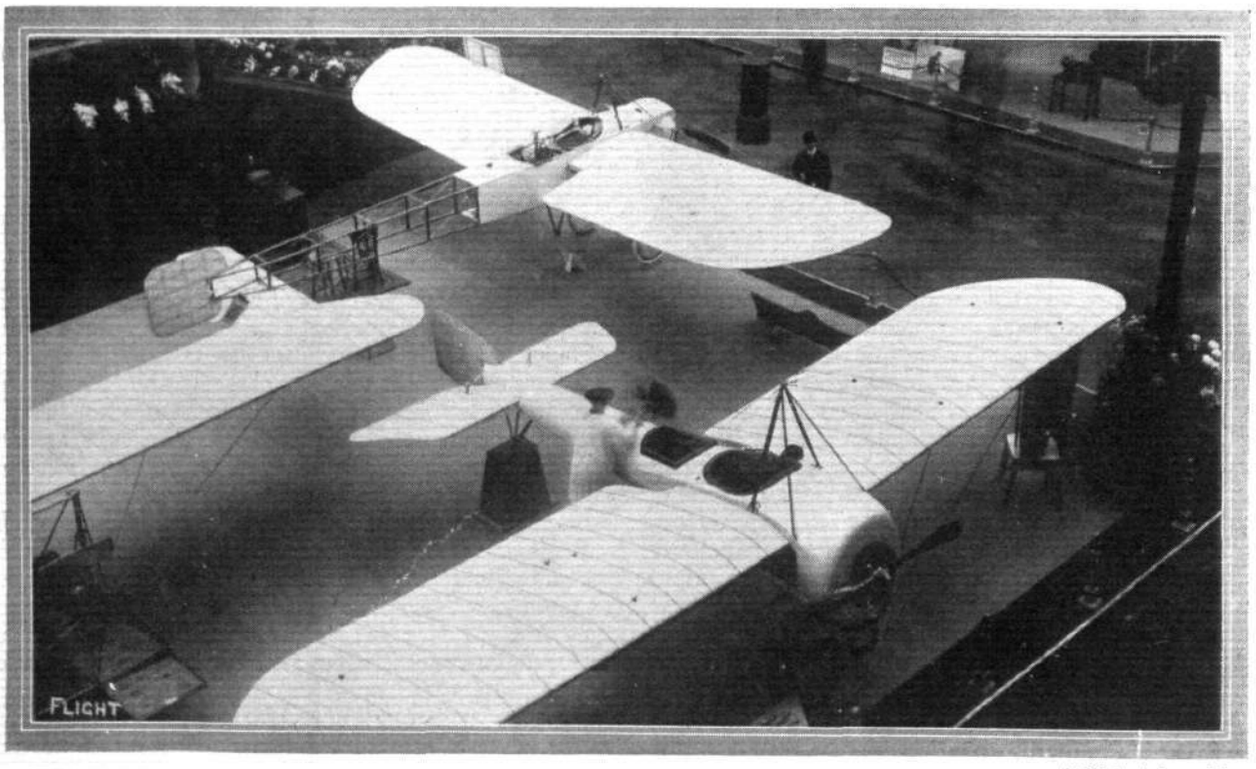


"Flight" Copyright.

The Blériot biplane and the Blériot waterplane at the Paris Salon.

Of the other monoplanes shown one is of the military type and is fitted with a machine gun, whilst the remaining two are a single-seater racing machine and a tandem two-seater.

biplane of the "pusher" type which, with a 70 h.p. Renault engine, has attained a speed of 102 kiloms. per hour, and climbed to an altitude of 1,000 metres in 14 mins.

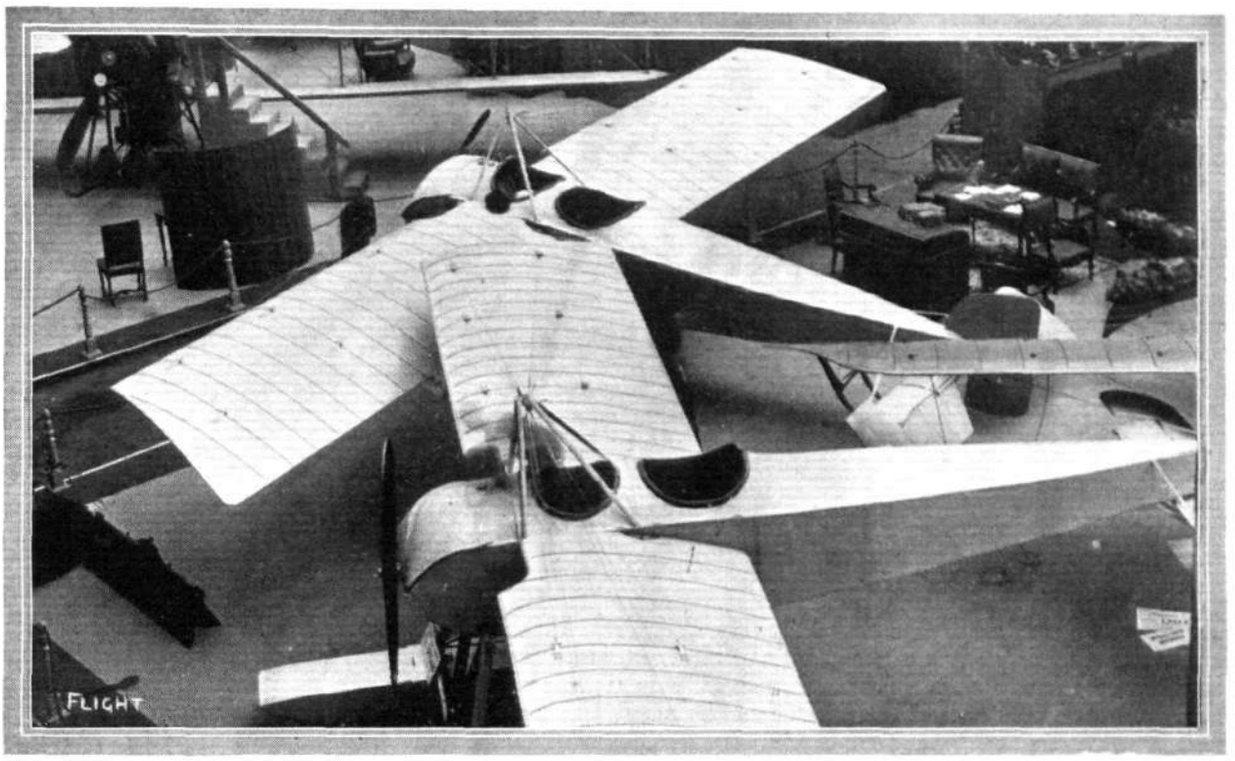


"Flight" Copyright.

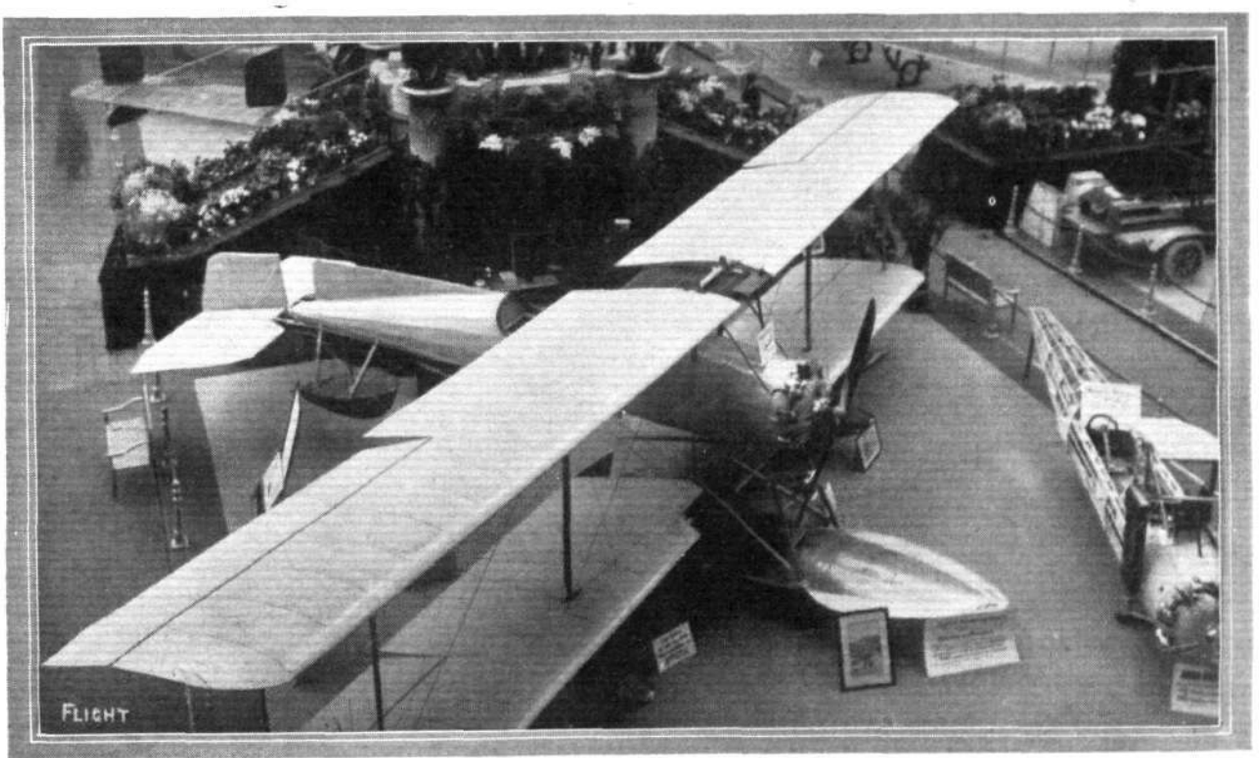
Two of the monoplanes on the Blériot stand at the Paris Salon.

BOREL.

Société Anonyme des Aeroplanes Borel are represented by three machines. One is a land machine of the military-type tandem two-seater, the pilot occupying the rear seat. A hydro-aeroplane of a similar construction as the land machine, with the exception, of course, that it is fitted with floats instead of wheels, is also shown, but the centre of interest of this stand is undoubtedly the torpedo type of machine on which is mounted a machine gun. In its general appearance this machine is somewhat reminiscent of the Paulhan-Tatin aerial torpedo. The pilot's and passenger's seats are situated in the forward portion of the *fuselage*, whilst the engine is placed inside the *fuselage* and behind the passenger's seat, and drives through a long shaft the propeller which is situated at the rear of the *fuselage* behind the tail planes. In the nose of the machine is mounted a machine gun (Hotchkiss) which is operated by the passenger.



The Borel exhibited at the Paris Salon. "Flight" Copyright.



The Breguet biplane at the Paris Salon. "Flight" Copyright.

BLÉRIOT.

On the Blériot stand are shown no less than six machines and *fuselages* of various types, and when one considers that there are at the Salon two more Blériot stands—one for *aeroplages* and one for *bateaux glisseur*—one begins to realise the activity of this well-known firm.

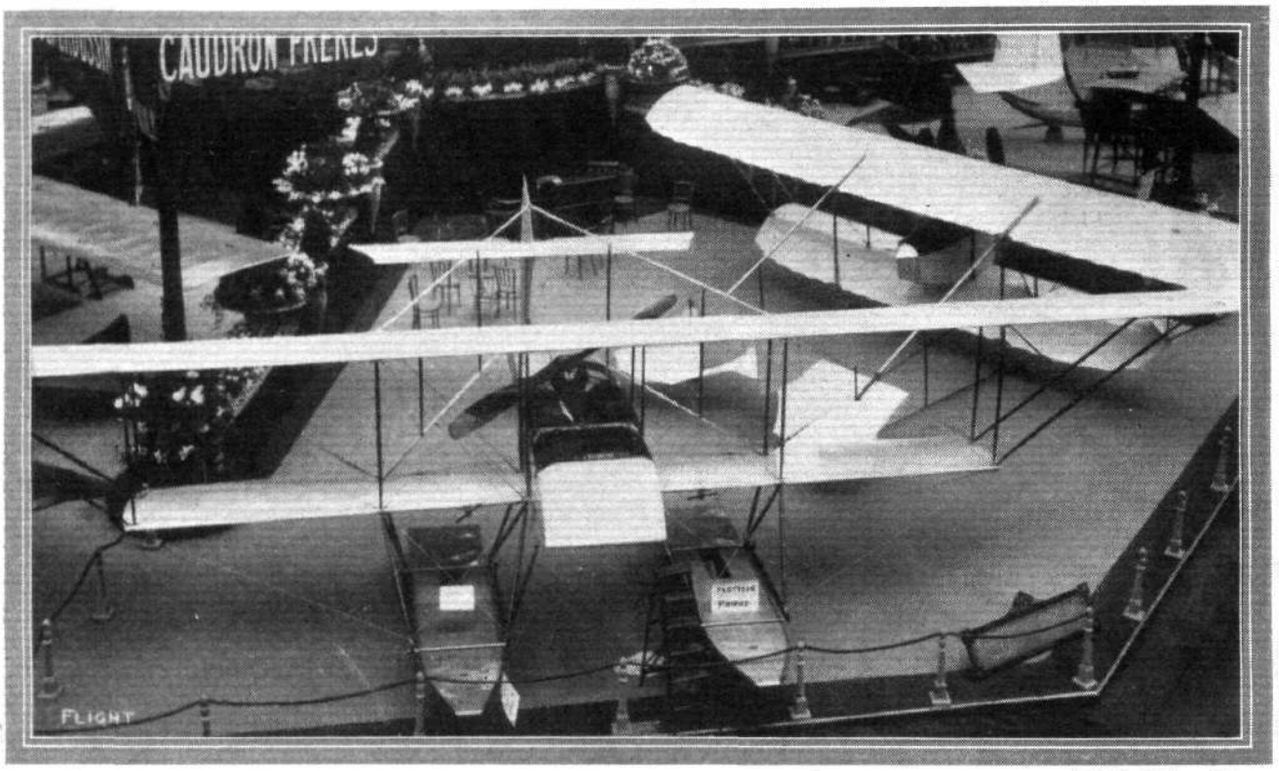
One of the machines shown belongs to the type XI class, which is already so well known, and which is still among the first of French aeroplanes although it was evolved four years ago. A complete machine of the tandem two-seater type XI–2 is also exhibited, and, although it is to all intents and purposes the same as those seen in England during the past year, its presence at the Salon is amply justified by the amount of good work this type has done in the French and various other military services. Of novel-type Blériots there are three examples, one type *fuselage coque*, one hydro-monoplane and a "pusher"-type biplane.

The *fuselage coque* type of machine is a tandem two-seater of very good streamline form and is probably a good deal faster than the older type Blériots, as the head resistance has been considerably decreased. The hydro-monoplane follows in general lines the land machines. It is a tandem two-seater of the light type; so light, in fact, that only an 80 h.p. Gnome engine is fitted. It must not from its lightness be concluded, however, that it is not a strong machine, for the method of suspension is such that the shock of alighting is very much lessened before it reaches the *fuselage*, thus making it possible to keep down the weight of that structure. The two Tellier floats with which this machine is fitted swivel round a common axis running across their front portion and are sprung at the rear by means of the usual Blériot deformable triangle. Each float moves independently of the other, and the upward travel of the floats is 35 centimetres, so that it will be seen that even in case of a very rough *amerrissage* the shock is greatly diminished both as regards the *fuselage* and the floats.

The Blériot biplane has been built with a view to meet the requirements of the French Army. In its general lines it may best be compared with a H. Farman biplane, but it differs from that machine in the constructional details. The chassis is of a very novel type and is similar to the chassis of the Nieuport-Dunne biplane.

BREGUET.

The Breguet firm are showing on their stand one complete hydro-aeroplane with a large central float and two smaller ones situated about half-way along the main planes. Between the two front members of the chassis is mounted a strong headlight which derives its current from a "Radios" dynamo. In addition is shown a *fuselage* which has been left uncovered for the purpose of showing the new construction, which appears to be a great improvement on that employed in earlier machines. A wireless transmitting apparatus is fitted in front of the observer's seat, where is mounted on a small writing desk the telegraph key and a writing pad. One is inclined to think that the use of the latter would be somewhat hampered by the vibration of the machine when in flight, as the table is not sprung in any way.



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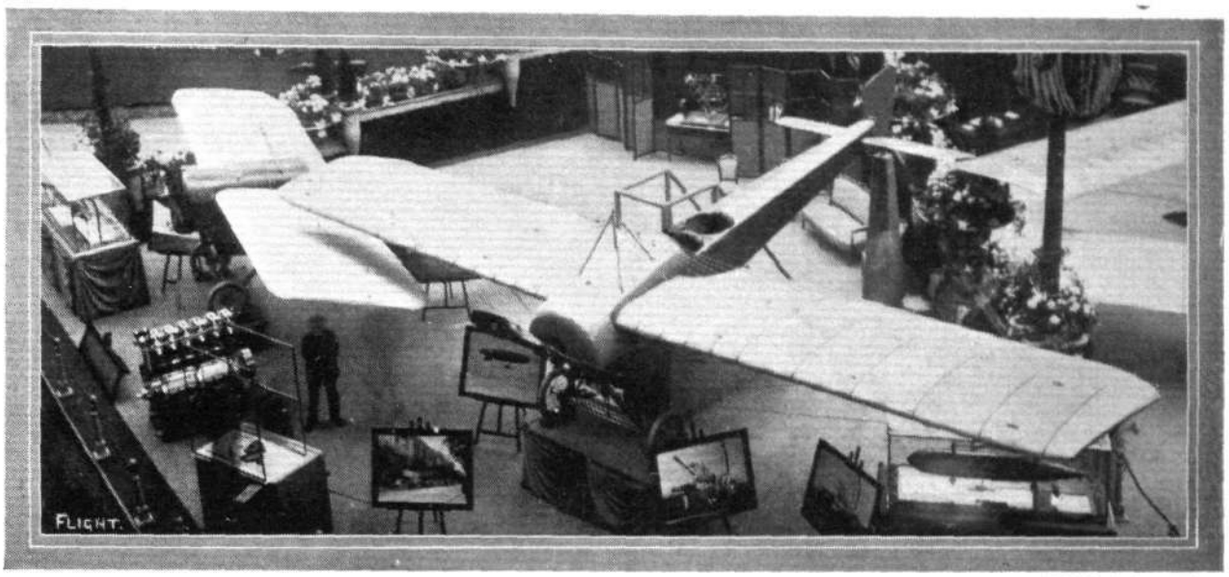
The Caudron stand at the Paris Salon.

CLEMENT-BAYARD.

On the Clement-Bayard stand are shown two all-steel monoplanes—a single-seater and a two-seater. The only parts which are made of wood are the chassis struts. The lift cables are attached to the lower member of the *fuselage*, so that should the chassis struts, which are the weakest part of the machine, break, there is still a chance of keeping the lift wires intact.

DEPERDUSSIN.

Great interest naturally attaches to the Deperdussin exhibit mainly, perhaps, on account of the tremendous speeds which these machines have put up. It would



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The Clement-Bayard stand at the Paris Salon.

seem that in the monocoque type the Deperdussin firm have found an entirely satisfactory *fuselage* construction, for the three machines exhibited on their stand are all of this type. Two machines for use over land are shown, one being the actual machine flown by Gilbert in his flight from Paris to the Baltic Sea (Rutnitz), a distance of 1,050 kilometres, which he covered in 5 hrs. and 11 mins., or at an average speed of over 200 kilometres per hour. The other land machine shown is the machine flown to victory by Prévost in this year's Gordon-Bennett race, and which was described in FLIGHT for November 22nd. A hydro-aeroplane, also of the monocoque type, completes the very interesting exhibit of the Deperdussin firm.

CAUDRON.

On the stand adjoining that of the Deperdussin, Caudron Brothers are showing two machines, one for work overland and the other a hydro-aeroplane. The land machine differs in constructional details only from those already known to our readers through illustrated descriptions in the columns of FLIGHT. The hydro-aeroplane is of the "pusher" type, and has a *nacelle* of somewhat different shape from those usually fitted. The floats are similar to those fitted on the tractor type of machine, the chassis possessing wheels as well as floats, so that the machine is really amphibious.

FARMAN.

On the Farman stand are shown two complete machines, one is a M. Farman hydro-aeroplane without the front elevator. This machine has tail outriggers of a similar type to those of the land machine, of which illustrations were published in the columns of FLIGHT a short time ago. The other is a H. Farman of quite novel design, being what the Germans call a one and a half plane. The top plane and tail planes are similar to those of the standard type H. Farman, but the *nacelle* is placed immediately under

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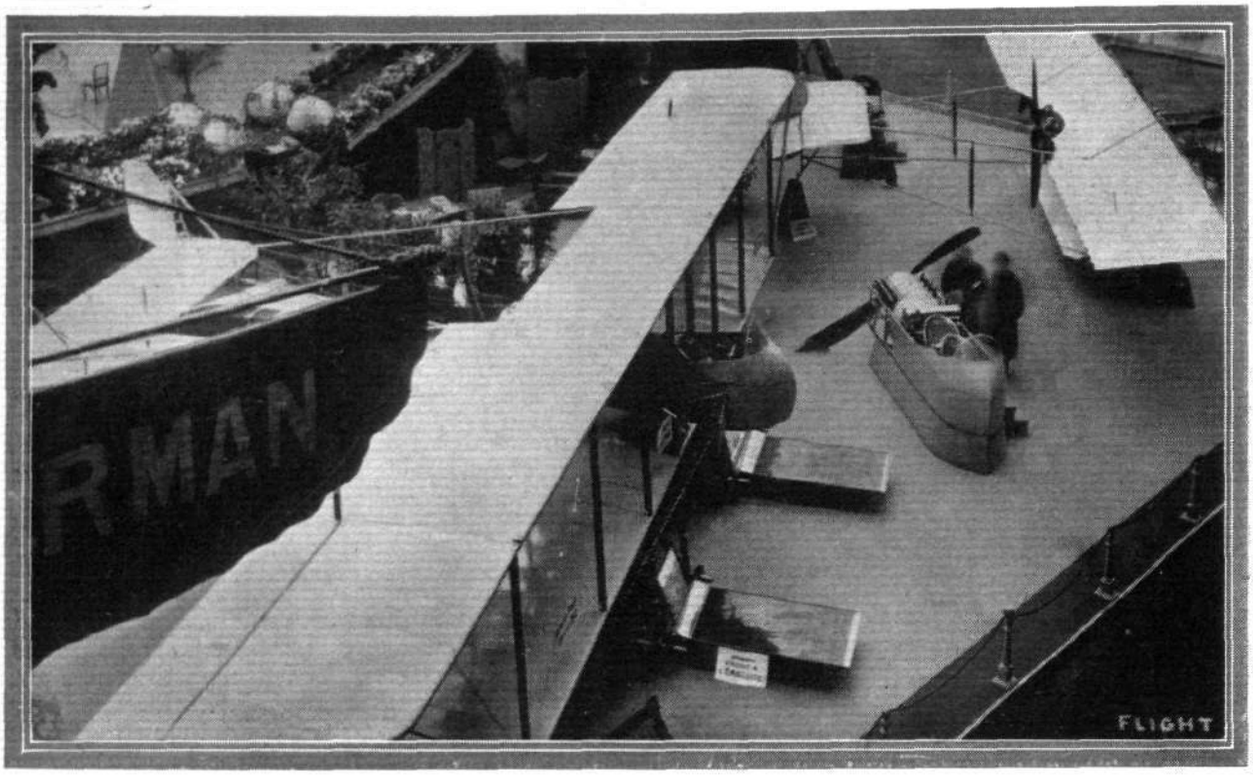
THE DEPERDUSSIN STAND AT THE PARIS SALON.—In the left-hand corner is Prevost's small *monocoque*.



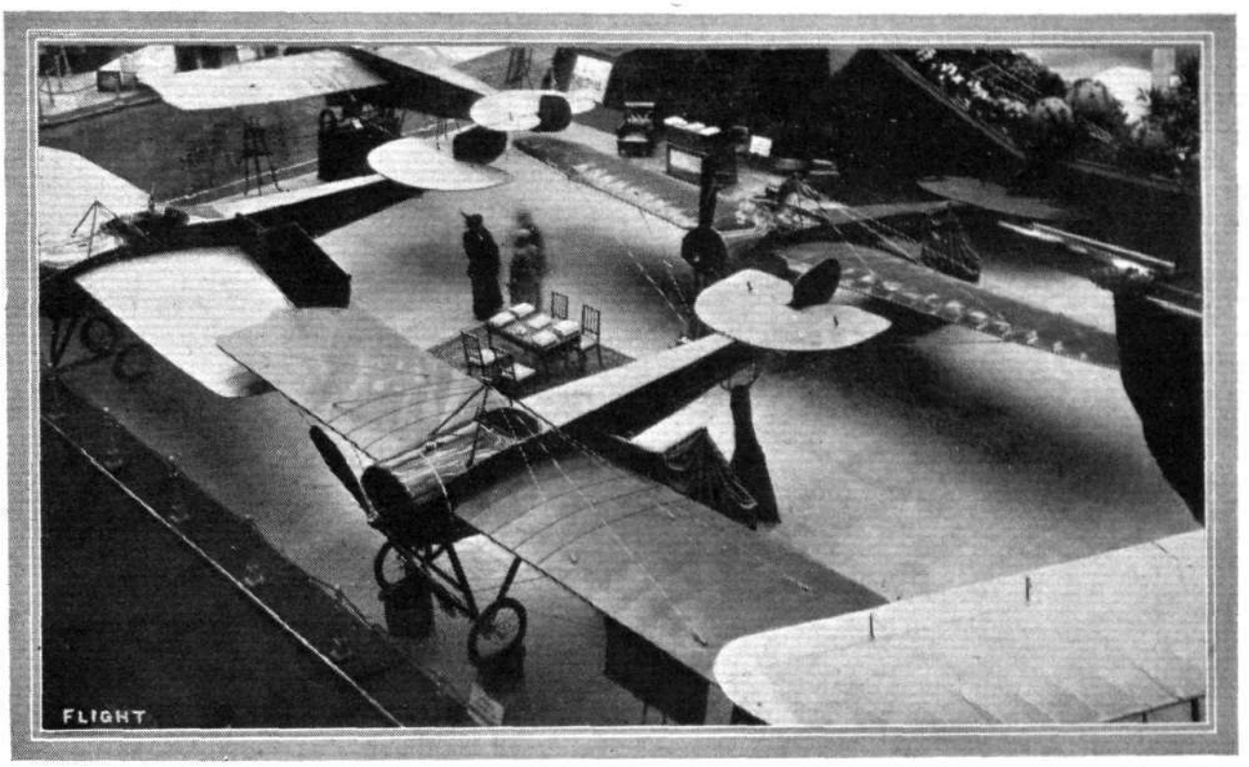
The Farman machines at the Paris Salon. "Flight" Copyright.

the top plane, whilst a quite small lower plane is placed down almost on top of the chassis wheels. It will be interesting to see what this machine will do, as one imagines that it would have a very high centre of gravity, and thus be very sensitive to the controls, to say the least.

F.B.A.

The newly-formed Franco British Aviation Co., Ltd., are showing two hydro-aeroplanes, both of which are of the Donnet-Leveque type. One of the machines, which is shown complete, is driven by a 9-cyl. 100 h.p. Gnome motor. The other, of which only the boat and the inner part of the *cellule* is shown, has a Salmson motor of 130 h.p.; this is the actual machine which won the 250-mile race at Deauville. A Curtiss flying boat is expected in a few days, but had not arrived at the time of writing these notes.

The Morane-Saulnier stand at the Paris Salon. "Flight" Copyright.



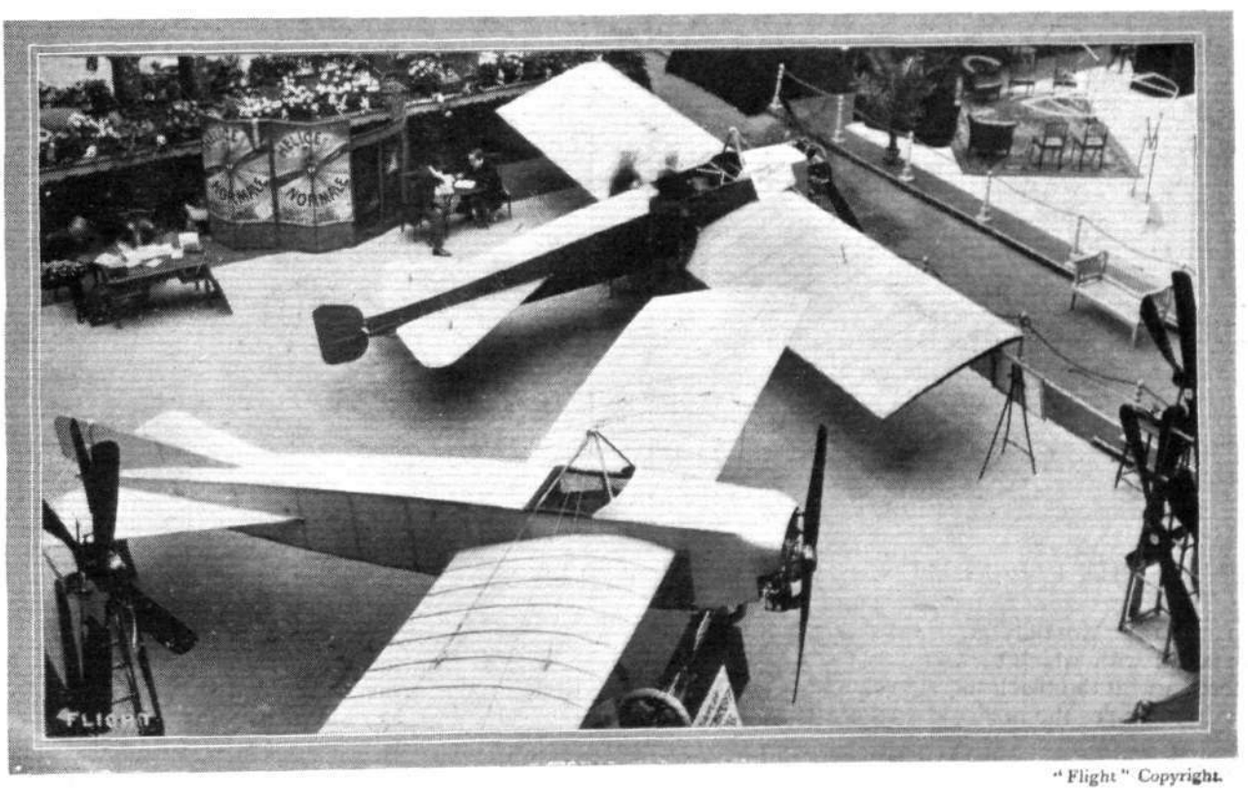
The Nieuport machines at the Paris Salon. "Flight" Copyright

GOUPY.

Two Goupy biplanes are exhibited this year—a tandem two-seater and a smaller single-seater. Neither of the two machines appears to have been altered to any great extent from previous models, but one notices that both machines are fitted with *ailerons* hinged to the rear spar instead of the pivoted wing tips employed on earlier machines of this make.

MORANE-SAULNIER.

Of the machines on the Morane-Saulnier stand, the one which attracts most attention is the "Parasol" monoplane, which has the wings mounted some distance above the *fuselage*. This arrangement has, of course, the very great advantage that an excellent view of the country is obtained, as the planes are above the pilot's head, and he thus has an unrestricted view in a downward direction.



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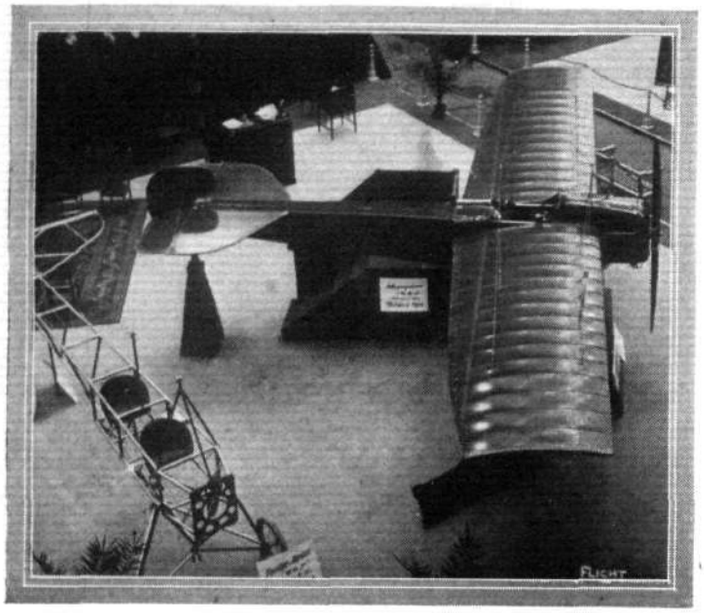
The Ratmanoff (in the foreground) and the De Beer monoplanes at the Paris Salon.

This machine is a tandem two-seater, the pilot occupying the front seat. Inside the *fuselage*, and behind the observer's seat is situated a special camera, which is pointed straight downward, so that photographs may be taken while the machine is in flight. The camera is operated from



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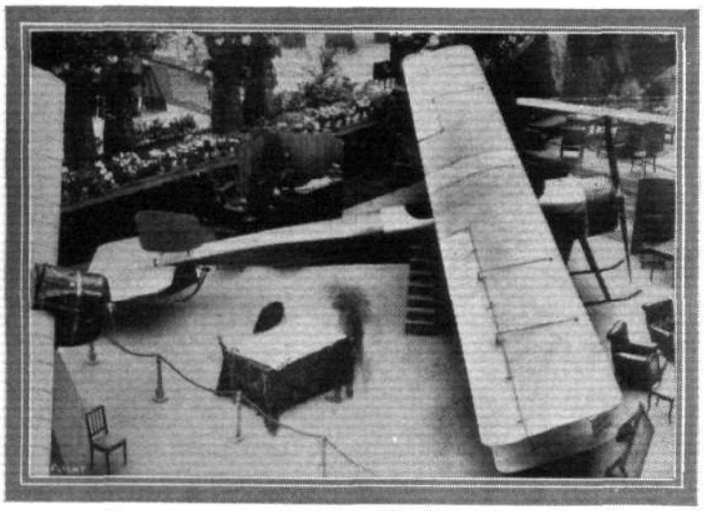
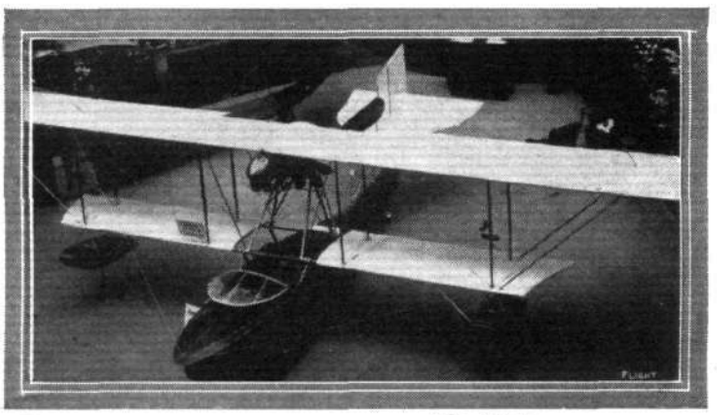
The R.E.P. at the Paris Salon.

the observer's seat by means of a single string, which serves the double purpose of actuating the shutter and the plate-changing mechanism. Mounted on a slanting support, which gives it the appearance of doing a right-hand spiral, is a replica of the machine in which M. Garros made his famous flight across the Mediterranean, from Tunis to Rome. A third standard type two-seater, having the seats placed immediately behind one another,





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AT THE PARIS SALON.—On the left the Paul Schmitt biplane; on the right the F.B.A. flying boat.

completes the Morane-Saulnier exhibit. The snowy white fabric with which these machines are covered, in connection with the black metal work and edgings, makes this exhibit one of the most graceful at the show.

MOREAU.

On the Emaillite stand is shown the Moreau monoplane of which so much has been heard through the winning of the Bonnet stability prize. This machine, it will be remembered, is made automatically stable longitudinally by having the pilot's seat slung pendulum fashion underneath the wings. These are—on this particular machine—covered with a transparent Emaillite preparation which is expected to render the machine practically invisible when flying at a good height, as the spars and ribs and the *nacelle* will be the only objects which can be seen.

PONNIER.

On the Ponnier stand are shown two monoplanes, which resemble in their general arrangement the one illustrated in the columns of FLIGHT a fortnight ago, which was flown by Emile Vedrines in the Gordon-Bennett Race. One of the machines is fitted with a rigid chassis similar to that employed on the afore-mentioned racing monoplane, whilst the other has a chassis of more orthodox type, in which the wheels are sprung in the usual way by means of rubber shock absorbers.

R.E.P.

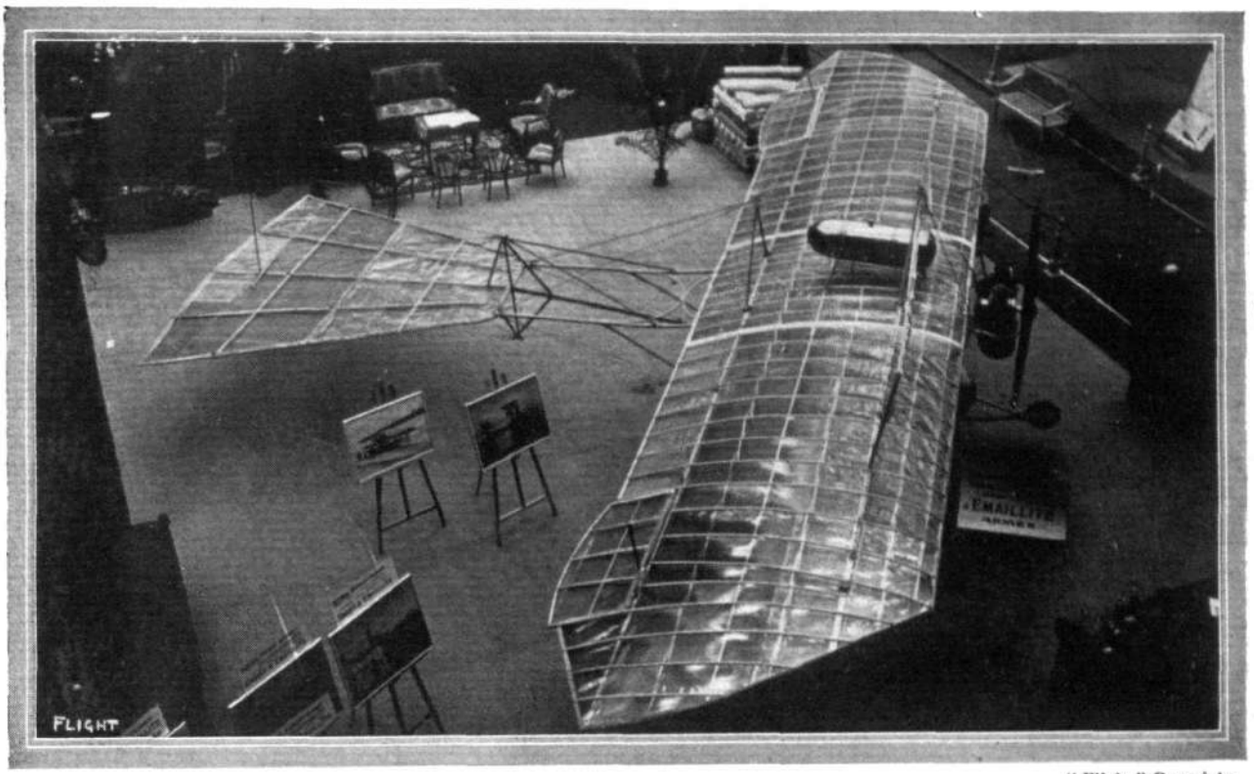
On the R.E.P. firm's stand are to be seen one complete machine—a single-seater monoplane—and the *fuselage* of a tandem two-seater. These machines are constructed throughout of steel tubes, and have the appearance of being immensely strong. The *fuselage* exhibited has been left uncovered, so that it is possible to inspect the construction. On the left-hand side of the *fuselage* is mounted a specially constructed aero camera, by means of which the observer can take photographs of the country over which he is flying.

PAUL SCHMITT.

Société Anonyme des Aeroplanes "Paul Schmitt" are exhibiting a very interesting machine—a tractor biplane, with variable angle of incidence. It is built almost entirely of steel and gives one the impression of being immensely strong. The advantages of being able to alter the angle of incidence, and thereby the speed while the machine is in flight, are too obvious to need enlarging upon, and the manner in which this operation is carried out appears to be a mechanically sound piece of work.

ENGINES AND ACCESSORIES.

The Gnome engine is fortunate in having a stand to itself in the main hall, and on it are exhibited some of the early designs of these engines, so that the various stages of development may be followed. The other Gnome engines on view include one of the 7-cylinder 75 h.p. *Monosoupape* type, and one of 200 h.p. with 18



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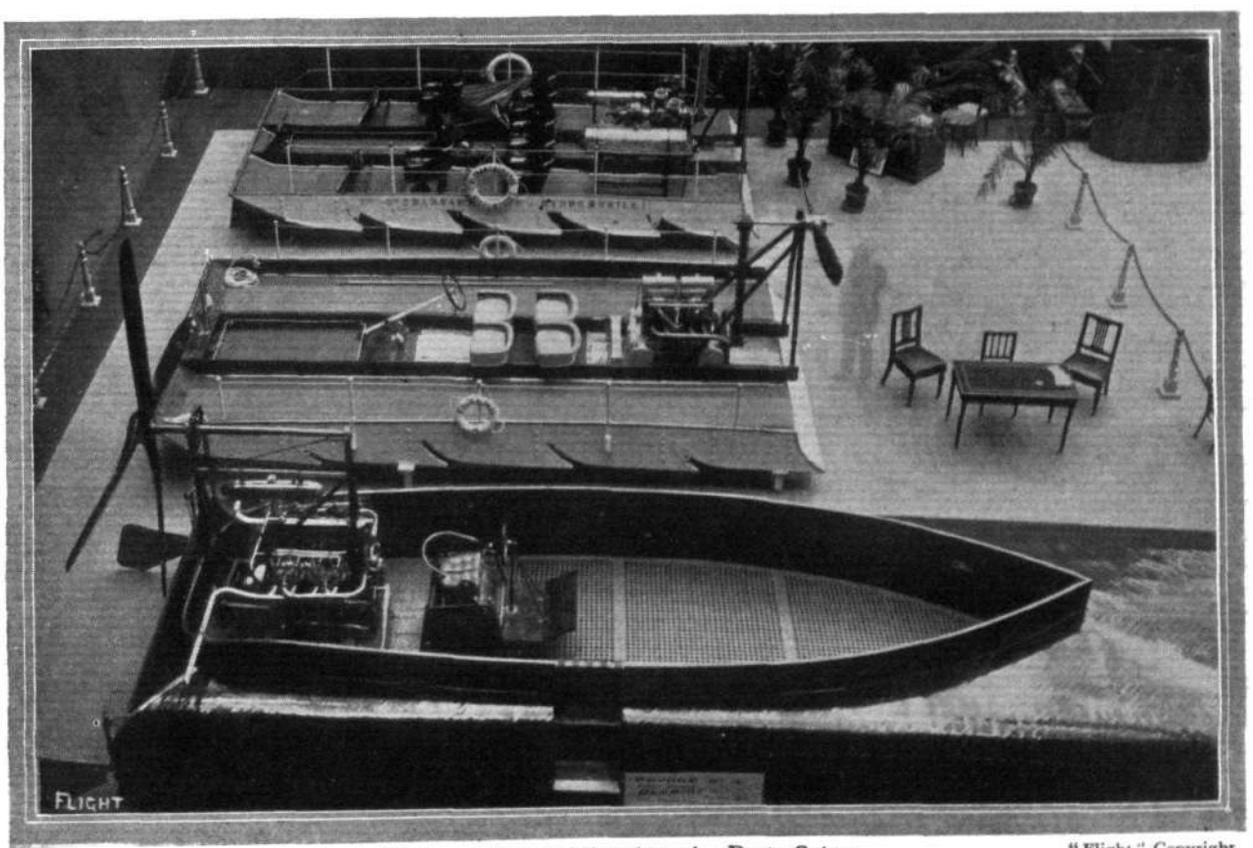
The Moreau Aerostable at the Paris Salon on the Emaillite stand.

cylinders. On another stand are to be seen various types of Anzani motors, the Rhone rotary motors, Canton-Unne and Clerget motors, while newcomers are the Esselbe and S.H.K., both of the rotary type. Propellers are also well represented, and on the stand of M. Chauviere is a very interesting Integral propeller in which the pitch is variable. Emaillite also have the honour of a stand on the ground floor, and have a striking exhibit in the shape of the Moreau automatic stability machine, with its transparent wings. Another dope which has been receiving a good deal of attention from visitors is Novavia.



Hydromobiles exhibited at the Paris Salon.

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The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

Aviators' Certificates.

THE following Aviators' Certificates have been granted :—

691 Sergt. James McCrae, R.F.C. (M.W.), (Short Biplane, Central Flying School, Upavon). Nov. 24th, 1913.

692 Shipwright Henry Herbert Scott, R.N. (Maurice Farman Biplane, Central Flying School, Upavon). Nov. 24th, 1913.

693 Capt. Daniel Harrison Macdonell, D.S.O. (Vickers Biplane, Vickers School, Brooklands). Nov. 25th, 1913.

694 Lieut. Augustus Charles Earle Marsh (Royal Horse Artillery), (Bristol Biplane, Bristol School, Salisbury Plain). Nov. 26th, 1913.

695 Lieut. Cedric Yeats McDonald (Seaforth Highlanders) (Bristol Biplane, Bristol School, Brooklands). Nov. 27th, 1913.

696 2nd Lieut. Gerald Henry Broadhurst, R.F.A. (Bristol Biplane, Bristol School, Brooklands). Nov. 29th, 1913.

697 Owen Bulmer Howell (Vickers Biplane, Vickers School, Brooklands). Nov. 29th, 1913.

698 John Marten Rush Cripps (Grahame-White Biplane, Grahame-White School, Hendon). Dec. 2nd, 1913.

The following Certificate was taken in France :—

1568 Commander Mansfield Cumming, R.N. (Maurice Farman Biplane, Etampes). Dec. 5th, 1913.

Aviators' Certificates.

NEW REGULATIONS.

Special attention is drawn to the new regulations for Aviators' Certificates which come into force on January 1st, 1914. In the altitude flight a maximum reading aneroid must be carried on the aeroplane.

The revised rules are as follows :—

AVIATORS' CERTIFICATES.

(*Fédération Aéronautique Internationale.*)

THE Sporting Authority governing aviation in each country represented on the F.A.I. can alone grant Aviators' Certificates to all candidates, of at least 18 years of age, and coming under its jurisdiction.

1. To candidates of the same nationality as the Club.

2. To foreigners belonging to a country not represented on the F.A.I.

3. To foreigners of a country represented on the F.A.I. ; but in this case the certificate can only be delivered with the authorisation of the Sporting Authority of the candidate's country.

The Royal Aero Club of the United Kingdom will grant certificates in accordance with the regulations of the Fédération Aéronautique Internationale to candidates who have complied with the following rules :—

RULES.

1. Candidates must accomplish the three following tests, each being a separate flight :—

A and B. Two distance flights, consisting of at least 5 kilometres (3 miles 185 yards) each in a closed circuit, without touching the ground or water ; the distance to be measured as described below.

C. One altitude flight, during which a height of at least 100 metres (328 feet) above the point of departure must be attained ; the descent to be made from that height with the motor cut off. The landing must be made in view of the observers, without restarting the motor.

2. The candidate must be alone in the aircraft during the three tests.

3. Starting from and alighting on the water is only permitted in one of the tests A and B.

4. The course on which the aviator accomplishes tests A and B must be marked out by two posts or buoys situated not more than 500 metres (547 yards) apart.

5. The turns round the posts or buoys must be made alternately to the right and to the left so that the flight will consist of an uninterrupted series of figures of 8.

6. The distance flown shall be reckoned as if in a straight line between the two posts or buoys.

7. The alighting after the two distance flights in tests A and B shall be made :—

(*a*) By stopping the motor at or before the moment of touching the ground or water ;

(*b*) By bringing the aircraft to rest not more than 50 metres (164 feet) from a point indicated previously by the candidate.

8. All alightings must be made in a normal manner, and the observers must report any irregularities.

9. Each of the flights must be vouched for in writing by observers appointed by the Royal Aero Club. All tests must be under the control of, and in places agreed to by, the Royal Aero Club.

10. The Royal Aero Club declines all responsibility for any accidents, or any damage that may occur to the aviators, their aircraft, or to any third parties during or in connection with the qualifying tests of the candidate.

11. Candidates must make application on a form provided for that purpose, and this form must be sent to the Royal Aero Club prior to the tests being made. Any expenses incurred must be borne by the candidates.

12. Foreigners belonging to a country represented on the Fédération Aéronautique Internationale can only receive a certificate from the Royal Aero Club with the consent of their national Sporting Authority. A certificate may be granted to a foreigner whose country is not represented on the Fédération Aéronautique Internationale.

13. The Committee of the Royal Aero Club will decide if the candidate has qualified for a certificate, but reserves the right to refuse the same or withdraw the same at any time without giving reasons.

14. The decision of the Committee of the Royal Aero Club in all matters connected with the tests is final and without appeal.

166, PICCADILLY, LONDON, W.
1st January, 1914.

HAROLD E. PERRIN, Secretary.

THE ROYAL FLYING CORPS.

The following appointments were announced by the Admiralty on the 8th inst. :—

Engineer Lieutenants : W. Briggs, to "President," additional, for temporary service in the Air Department, Admiralty, December 6th ; T. R. Cave-Browne-Cave, to "President," additional, as Overseer at the Works of Sir W. G. Armstrong, Whitworth and Co., Newcastle, for rigid Airship No. 15, undated.

The following appointments were announced by the Admiralty on the 10th inst. :—

Engineer Lieuts.—C. Randall, to the "President," additional, as overseer at works of Messrs. Vickers, Ltd., Barrow-in-Furness, for airships ; C. Breese, to the "President," additional, for service at Central Flying School as instructor in theory and construction, both to date December 18th.

Memorial to Lieut. Hotchkiss.

THE memorial window erected to the memory of the late Lieut. E. Hotchkiss in Stokesay Parish Church will be unveiled to-morrow, Sunday, at 3.30 p.m.

"A Voyage in Space."

SUCH is the subject of the six Christmas lectures for children which are to be delivered at the Royal Institution, Albemarle Street, W., by Prof. H. H. Turner. In the first lecture Prof. Turner will deal with various imaginary voyages of Jules Verne and H. G. Wells, the force of gravity, the movement of comets, &c., while in the second he will speak of aeroplanes, balloons, &c., and go on to enlighten the juvenile audience as to the nature and properties of the atmosphere. The other lectures will be taken up with what can be seen with a telescope, the moon and planets, the sun and the stars. The dates of the lectures are December 27th, 30th, January 1st, 3rd, 6th and 8th, and the lecture commences at 3 o'clock each day. These lectures should indeed be a feast of joy for the youngsters.

Lighthouses for Aircraft.

SPEAKING at the annual dinner of the Middlesex County A.C. the other day, Mr. Claude Grahame-White said he thought it would be a pity for motorists to be premature in altering signposts, for they would soon want lighthouses and aerial posts. Up to the present they were free of fines in the sky, and he hoped it would be a long time before they got the bobbies up there.

FROM THE BRITISH FLYING GROUNDS.

Royal Aero Club Eastchurch Flying Grounds.

THE sad death of Capt. Wildman-Lushington, R.M.A., cast quite a gloom over the aerodrome, as the deceased officer was very enthusiastic and popular.

Previous to the accident, Eng.-Lieut. Briggs, on Blériot 39, Sub-Lieut. Pierce, on Avro 16, Sub-Lieut. Marix, on a Short, Lieut. Ireland, on a Maurice Farman, and Com. Samson, on Short No. 3, were up for flights.

Wednesday, Thursday and Friday were blank days, and Saturday being a good day some flying was done, Prof. A. K. Huntington, who is now flying better than he has ever done, getting the machine up to good heights, made several really good flights on his machine. The machine flies very steadily although slow, when compared with some of the Service machines of the same horse-power.

To summarise, the pilots included Com. Samson, Eng.-Lieut. Briggs, Lieut. Davis, Lieut. Ireland, Subs. Marix, Littleton, Rainey, P.O. Andrews. The machines: Shorts 2, 3, 64, 65, Avros 16 and 41, Sopwiths 27 and 33, Maurice Farman, Blériot 39, Deperdussin 7.

Brooklands Aerodrome.

ON Monday, last week the Martinsyde monoplane was tested over a measured course of 1,000 yds., which it covered at the excellent rate of 89 miles an hour. Mr. Dukinfield Jones was further testing the Flanders biplane. The Bristol and Vickers Schools had a number of machines out. Herr Roempler was out again on the D.F.W. biplane.

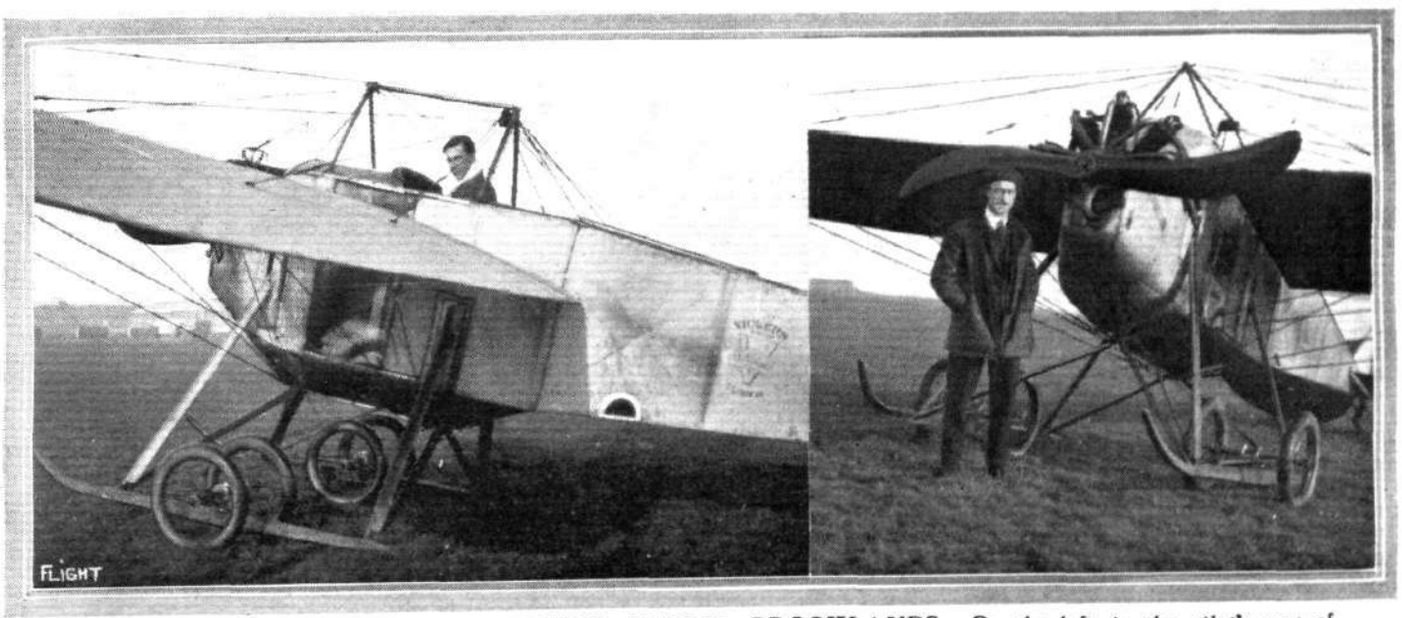
On Tuesday, Mr. Dukinfield Jones made a number of lengthy flights on the Flanders biplane in the morning. The Vickers and Bristol Schools were also busy, but in the afternoon it was too windy for school work.

The weather conditions on Wednesday were too windy for any school work, and on Thursday there was no improvement, so that school work was again at a standstill in the open.

The Martinsyde monoplane was again flying well on Friday, whilst in the afternoon both Bristol and Vickers Schools were in full swing. Herr Roempler on the D.F.W. biplane made some fine flights, both solo and with passengers.

Saturday morning the Vickers and Bristol schools were busy with

AT THE VICKERS SCHOOL, BROOKLANDS.—On the left, Chief Pilot and School Manager, Mr. R. H. Barnwell, in the seat of Vickers No. 5 monoplane. On the right, Mr. T. W. Elsdon, who has been appointed assistant pilot at the Vickers School.



TWO PUPILS AT THE VICKERS FLYING SCHOOL, BROOKLANDS.—On the left, in the pilot's seat of Vickers No. 5 monoplane, Mr. A. E. Morgan; on the right, Mr. Henry Webb.

pupils. Mr. Dukinfield Jones tried an Avro propeller on his Flanders biplane, and succeeded in getting another 100 revolutions out of his 65 Isaacson engine, making his machine quite another five miles an hour faster. Mr. Pixton flew off to Farnborough on a Sopwith biplane, and Mr. Hawker was flying another machine of the same make. Herr Roempler was again flying well on the

Lieut. S. H. Batty-Smith, a new pilot who obtained his *brevet* at the Vickers School, Brooklands, last month.

D.F.W. biplane, both solo and with passengers, making several good circuits at a great height. Mr. Raynham was out on the 50 h.p. Avro biplane testing the engine, which was not running well, but improved after a few slight adjustments.

Notwithstanding the misty conditions on Sunday, nine different machines were out, and some extremely interesting flying was witnessed. Mr. Merriam was first out on the Bristol biplane with Mr. Don, one of his pupils, followed by Mr. Pixton on the Sopwith biplane. Herr Roempler was flying well and steadily on the D.F.W. biplane, both solo and with passengers. Mr. Raynham made some fine flights on the 50 h.p. Avro biplane. Mr. Dukinfield Jones made a number of flights on the Flanders biplane. Bristol pupils were busy on a second Bristol machine. Messrs. Barnwell and Knight were carrying passengers and pupils on the 50 and 70 h.p. Vickers school machines and on the new 100 h.p. Vickers gun-carrying biplane. Mr. J. Alcock has now returned to Brooklands with a new 100 h.p. Sunbeam, which is being fitted to the Maurice Farman biplane. On this machine Mr. Alcock will make an aerial tour to the various aerodromes, in order to demonstrate the capabilities of the new engine. The winner of the ballot for the free passenger flight, Mr. G. Wheatley, of Station Road, Shepperton, was taken up by Mr. Barnwell on the 70 h.p. Vickers biplane.

Bristol School.—Rain and windy all Monday morning last week. In the afternoon Merriam testing, afterwards Mr. Macdonnell made a high flight about 700 ft. with a spiral descent and landing perfectly. Lieut. Bridson following on circuits and straights, practising landings. Merriam up behind Mr. Jaques on straights giving him twenty minutes' tuition. Merriam finished with a solo to sheds owing to darkness.

Foggy early on Tuesday. Cleared later. Merriam then for test, taking Mr. Finny as passenger, but found too bumpy for school work. Too windy in the afternoon for flying. Blowing a gale on Wednesday and Thursday.

Very windy on Friday morning. Merriam for test, later taking Mr. Don (new pupil) for his first trip, afterwards giving this pupil tuition on straights and circuits. Afterwards behind Mr. Jaques on straights. (This pupil is nearly ready to go alone.) Lieut. Bridson and Mr. Macdonnell a solo each.

Merriam up first, Saturday, taking Mr. Don as passenger, afterwards giving tuition to this pupil from behind on straights. Mr. Macdonnell two high solos, and Lieut. Bridson a good solo for height. Merriam up later, taking Mr. Finny as passenger. Too wet for flying in the afternoon.

Vickers School.—Monday afternoon last week, Messrs. Elsdon, Joubert de la Ferte, Webb, Morgan, Chataway and Waterfall on No. 5 mono. Knight on biplane No. 21, with Messrs. Monckton, Dowding and Dawson. Capt. Lee solo.

Tuesday, Knight test on biplane No. 20. Raining.

In afternoon, Friday, Messrs. Elsdon, Chataway and Joubert de la Ferte on No. 5 mono. Knight with Messrs. Duff and Dowding on biplane. These two pupils then for solos. Barnwell test No. 3 mono.

Elsdon with Mr. Monckton, Saturday, Messrs. Lee and Duff solos on biplane.

Sunday, in afternoon Barnwell on biplane 26 with passengers, Elsdon on biplane 21 with Mr. Monckton. Knight with Mr. Duff. Barnwell on gun-carrying biplane, solo and with passengers.

London Aerodrome, Collindale Avenue, Hendon.

Grahame-White School.—Monday, last week, Mr. Norris straights with Instructor Strange. Mr. Cripps solo circuits and figures of eight. Mr. A. G. Moore (new pupil) rolling with instructor. Mr. Howarth solo straights. Mr. Bjorkland straights with Instructor Manton in passenger seat.

Tuesday, Messrs. Norris, Clarke, Edridge-Green, Bjorkland, Kershaw and Moore, straights with Instructor Strange. Messrs. Lillywhite and Cripps, solo circuits and figures of eight. Messrs. Von Segebaden, and Howarth solo circuits. Later in the day Mr. Cripps went in for his *brevet* tests, and gained his certificate.

Messrs. Webb and Moore straights Friday, with Instructor Strange in passenger's seat. Mr. Howarth and Lord Grosvenor solo circuits. Mr. Von Segebaden solo circuits and figures of eight.

W. H. Ewen School.—On Monday, last week, school was out at 7.30 a.m. After test flight by M. Baumann on *brevet* machine, Mr. Johnson and Lieut. Holbrow did half-circuits, Mr. McGregor small turns and Mr. Badgery straights. Mr. F. W. Goodden made test flight on 35 h.p. Caudron No. 1, after which Lieut. Kinnear and Mr. Cooper did straights. At 3.15 p.m. M. Baumann was instructing Messrs. Badgery, Johnson, McGregor, and Lieut. Holbrow, who were doing half-circuits and small turns. Mr. F. W. Goodden made a test flight on No. 1, after which Lieut. Kinnear and Mr. Murray were doing straights. Messrs. Cooper and Carruthers short flights, and Mr. Bankes-Price rolling.

At 9.30 a.m. on Tuesday M. Baumann was testing the *brevet* machine, after which Messrs. Badgery and McGregor did half-circuits. After test flight by Mr. F. W. Goodden on No. 1, Lieut, Kinnear and Mr. Murray did straights, Messrs. Cooper and Carruthers short flights and Mr. Bankes-Price rolling.

Lieut. Treeby, who recently secured his certificate at the Bristol School, Brooklands. His flying was exceptionally good, and gives great promise for his future work.

It was far too windy on Wednesday and Thursday to attempt school practice, and also on Friday morning, but on Friday afternoon at 4 p.m. M. Baumann was out making a test flight on *brevet* machine, after which Mr. Johnson did circuits. Mr. F. W. Goodden also made a test flight on Caudron No. 1, and Mr. Cooper did straights.

Mr. J. M. R. Cripps, one of the latest pupils to pass his *brevet* tests at the Grahame-White School at Hendon.

The pupils were out at 7.30 a.m. on Sunday, when, after a test flight by M. Baumann on *brevet* machine, Mr. Johnson and Lieut. Holbrow did circuits and landing practice. After Mr. F. W. Goodden had made a test flight on No. 1, Lieut. Kinnear, Messrs. Murray and Cooper did straights, and Mr. Bankes-Price was rolling.

Hall School.—Monday, last week, Mr. Gering, father of a pupil, had passenger flights. Mr. Hall circuits alone on Caudron.

W. A. Burns, of New Zealand, joined school Tuesday, and was taken for a passenger flight by J. L. Hall. Miss d'Elsa one circuit as passenger, then G. L. Temple (of upside-down fame) one circuit with J. L. Hall. New English-built Caudron purchased for school work.

Wednesday and Thursday blowing a gale. Friday, engine testing, and Saturday, W. A. Burns, of New Zealand, straights alone on 28 Anzani monoplane. Sunday, W. A. Burns good straights, but greatly hampered by dense fog.

Salisbury Plain.

Bristol School.—High winds and rain prevented any attempts at tuition on Monday, Tuesday and Wednesday last week.

No flying was possible for the rest of the week.

Shoreham Aerodrome.

VERY inclement weather prevailed at Shoreham last week, making school work outside impossible on every day excepting Saturday. Elliott then came out to try the air before instructing, and his flying was quite good. Cannon is progressing rapidly, and his handling of the 45 h.p. Avro shows insight. Purnell, who has been on the 35 h.p. Avro up to the present, is now ready for advancement to the 45 h.p. machine. The two new pupils, Lieut. Clemson, R.N.R., and Midshipman Thompson, R.N., have arrived, and commenced the "rolling" stage. On Sunday a good morning's work was done, Elliott putting up some excellent flights previous to instructing.

Both Mr. Cecil and Mr. Eric Pashley have been flying the 50 h.p. Gnome-H. Farman during this and last week, and some very pretty stunts have been accomplished. It is quite remarkable to note the difference in style between the younger and elder brothers' flying. The new 'bus should be out very shortly. The "Chocolate Soldier" has migrated to another shed, where a dismantling is probable.

AERONAUTICAL SOCIETY OF GREAT BRITAIN.

Official Notices.

Meeting.—The third meeting of the forty-ninth session will be held on Wednesday, December 17th, at 8.30 p.m., when the Right Hon. the Lord Montagu of Beaulieu will preside. Mr. C. T. Weymann will read a paper, to be followed by a discussion on "Fast Flying as a Science."

Members are reminded that, under the rules, they may introduce visitors to general meetings.

Tickets for visitors, not introduced, may be obtained from the secretary, 11, Adam Street, Adelphi.

BERTRAM G. COOPER, Secretary.

Two sergeants who have recently secured their flying *brevets* at the Central Flying School, Upavon. On the left, Sergt. D. Patterson, who passed on a Short biplane; on the right, Sergt. F. Farrer, who passed on a Maurice Farman.

"THE COMING AIRSHIP."

THE DISCUSSION.

AFTER Capt. Waterlow, R.E., had concluded the reading of his paper on "The Coming Airship," at the meeting of the Aeronautical Society, on the 3rd inst., the author illustrated his remarks by lantern slides, showing the construction, method of working, and the control of the "Gamma," "Beta," and "Eta," and the Willows, Parseval and Astra Torres airships.

In opening the discussion, Lieut. Usborne, R.N., said he considered that the lecturer had been too moderate in estimating the future speed of airships. France had under construction at the present time no less than six dirigibles capable of a speed of 55 miles per hour, and two of these, which would carry out their trials in March next, should attain 60 miles per hour. Russia was now building a 63 miles per hour airship, which would be able to carry enough fuel to enable it to travel for from 30 to 36 hours at full speed, and it would therefore be possible for such a vessel to remain in the air for two or three days, if the speed were reduced to about one half. This airship would be also capable of ascending to a height of between 8,000 and 12,000 feet with little difficulty. He thought that the prospects of attaining a speed of 70 miles per hour in the near future were very excellent, and he emphasised the importance of high speed, as it would enable an airship to face any gale, and be largely independent of weather conditions, which are always a factor in aerial navigation.

Major Baden-Powell remarked that he had been accused by the author of saying that non-rigid ships could not hope to exceed 35 miles per hour. This he had been unable to verify, but he found he had said, some years ago, that the aeroplane was capable of double the speed of the airship, which statement was true, even at the present day; and hence if the airship ultimately attains a speed of 70 miles per hour, it is probable that the aeroplane will then be capable of 140 miles per hour. Speed was a vital factor not only in war but also in commercial undertakings. As regards the inflammability of the gases, he thought that the production of a gas that would not readily ignite, but which would be suitable for the inflation of the balloon, would add greatly to the value of an airship, and he understood that the National Physical Laboratory was engaged in experimental work with this object in view.

Mr. Willows objected to the comparison that had been made by the previous speaker between airships and aeroplanes, as the speeds which had been quoted for the latter applied only to racing machines. The proper basis of comparison, he considered, was between the speed of an airship and that of a weight-carrying aeroplane, and then so marked a difference would not be exhibited; while he believed that a greater proportionate increase in speed would take place with airships than with aeroplanes.

Mr. Mervyn O'Gorman expressed the opinion that the lecturer did not go far enough when he alluded to the airship of the future. His idea was to have a ship six times the size of a Zeppelin, for so long as these small airships were built, it would be necessary to deprive them of many of the necessary accoutrements that were almost essential. The great point in favour of airships was their safety—the risks were comparatively small—but as the result of this there was nothing to appeal to the imagination. As illustrating this aspect of the question, he cited the case of Lord Haldane—when he was Secretary of State for War, he made several ascents in a dirigible without any special notice being taken; but so soon as Mr. Winston Churchill became a passenger in an aeroplane, it was immediately the subject of much comment. Against the airship it had been urged that its size made it a good target, but he said size is relative, and the airship made an extremely difficult target. The idea that had once obtained, that the non-rigid dirigible was incapable of high speed, had now been entirely dispelled, because of the performances of this class of vessel, and with the new high tensile strength steels that are now available, he had great hopes for the future of the airship. He also had great hopes of the aeroplane, but no aeroplane had the endurance of an airship, neither could any heavier than air machine carry 30 people. He did not consider that fire was as important as Capt. Waterlow indicated, because once you knew what may cause the fire, it was an easy matter to set to work to prevent it. He mentioned that Berner had proposed using a double shell to the gasbag, and to fill the intermediate space with some inert gas, which would thus afford sufficient protection.

Major-General Ruck here interposed that as Captain Waterlow had referred to the action of the Press, perhaps some representative would care to say something on the matter.

Mr. Turner, in accepting this invitation, said that he thought the remarks were fully justified, but, at the same time, he considered that the author might have made some exceptions, as long before the Army did anything serious, there were many who favoured the airship and had been consistent throughout. He hoped that there would not be the series of catastrophes such as had happened in Germany recently, as there would then be probably such an outcry that the Government would be unable to proceed any further in this branch of work.

Capt. Wood said that although Mr. Willows had suggested that the fighting aeroplane had a speed of 60 miles per hour against the airship's 50 or 55, he (the speaker) thought that 75 miles per hour was more in accord with modern work for the former, and that if the dirigible could ascend to a height of 5,000 or 6,000 ft. and the aeroplane to 9,000 or 10,000 ft., the latter would be somewhat of an opponent for the airship.

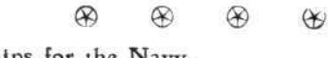
Capt. Lefroy, R.E., was asked by the Chairman if he had any remarks to make, especially relating to wireless telegraphy, and, in response, stated that he usually allowed one pound weight per mile for wireless outfits, and found no difficulty in receiving aircraft at any speed—the signals being quite clear. They magnified the signals one hundred times, and used a wave length of 500 metres. The sending apparatus occupied a space of about 20 ins. by 10 ins. by 6 ins., and weighed about 70 lbs., while the receiving apparatus weighed about 20 lbs., or, roughly, 100 lbs. for the complete outfit, including intensifiers. With this, they could send for 100 miles. He added that the generator could be worked off the main engines, but they had found that a Douglas motor cycle engine answered admirably.

Mr. Green, of the Royal Aircraft Factory, pointed out that the airship was much harder to design than was the aeroplane, as the information available was much smaller, and the drawing office work was much greater. He ventured to say that the airship was not really far advanced, and that the airship of the future would come to finality long after the aeroplane had attained a high standard of perfection.

The Chairman (Major-Gen. Ruck) remarked that they always endeavoured to have a chairman at their meetings who had been closely identified with the subject of the paper to be read. But on this occasion they had found great reluctance on the part of the gentlemen they had approached, probably because of the secrecy attaching to the work and because they were now designing machines. Hence it was more desirable to have a discussion in the absence of official views, so as to let the public know unofficially what was being done.

Capt. Waterlow, in replying to the discussion, agreed that the speeds he had given as reasonable were low, but he did not wish to quote too high a speed, as it might be thought that he was drawing upon their imagination. In a combat between an airship and an aeroplane, he considered it doubtful whether a speed of 85 miles per hour would be exceeded by the latter, in view of the fact that it would have to carry a wireless set, passenger, gun, fuel, and ammunition in order to be of any service, and so soon as an airship sighted an aeroplane, it would start to rise, thus rendering a successful attack from the latter a very difficult matter, in view of the superior armament of the airship. The question of a suitable weapon had hardly been considered, but he would remark that there were great possibilities in the use of vortex rings, such as had been used in France in connection with vineyards. To show the destructive effects that they can produce, he stated that when fired horizontally they were capable of breaking up a wooden fence at a distance of 100 yards.

The meeting concluded with a vote of thanks to Capt. Waterlow for his excellent paper.



New Airships for the Navy.

THE progress of the new airships for the Navy is indicated by the appointment by the Admiralty, referred to on p. 1358, of engineer officers to superintend the work of construction of the rigid airship now being built by Messrs. Sir W. G. Armstrong, Whitworth and Co. and other airships building by Messrs. Vickers Ltd.

Edinburgh Aeronautical Society.

ON December 18th at 8 p.m., lecture on "The Aeronautical Engine" by Mr. John Hutcheon, one of the entrants for the War Office engine trials, in Dowell's Rooms, George Street. There will be a discussion afterwards. Professor R. Stanfield, M.I.M.E., in the chair.

The "Sachsen" Fogbound.

LEAVING Dresden at a quarter to six on Sunday morning, the Zeppelin liner "Sachsen" cruised to Hamburg, where she arrived at 3 p.m. On account of the dense fog she was unable to land, and an hour later, when at a low altitude, she tore down some telephone wires at Quickborn. Shortly afterwards the airship landed on Quickborn Heath, and was taken in charge by a detachment of the airship battalion at Fuhlsbuettel.

FLIGHT

FOREIGN AVIATION NEWS.

Looping the Loop at Nice.

ON several days last week Hanouille gave numerous displays of looping the loop, &c., on his Blériot machine at Nice, while on Sunday afternoon during a flight of half an hour over the Anges Bay he gave a special exhibition of turning on one wing and S dives and looped the loop ten times, these evolutions being watched by a large crowd on the Promenade des Anglais and the jetty.

Chevillard at Lille.

LAST Sunday afternoon about 20,000 people gathered at the Ronehin aerodrome at Lille, to see a fine exhibition of upside-down flying and looping the loop carried out by Chevillard on his Henry Farman machine.

Pegoud Back at Buc.

LAST week Pegoud was back at Buc, and on the 4th inst. made some exhibition flights, including turning with the planes vertical, dives on the wings, and tail dives, upside-down flying, Z dives, and a series of loops. On Sunday afternoon he was flying a two-seater Blériot, but made no attempt at upside-down flying. Bidot was, however, carrying out some tests with a parachute from a Blériot machine.

Testing the Edelweiss Motor.

ON Sunday, at Villacoublay, Espanet made several fine flights on a Nieuport fitted with a new radial motor, the Edelweiss, one of the new comers on view at the Paris Show.

For Night Arrivals at Buc.

FOR the guidance of aviators who arrive at Buc after dusk, special lights have been installed at the Blériot and Farman aerodromes, and they are now working.

Bidot Succeeds Perreyon.

BIDOT, who has made a number of fine flights on the Blériot monoplane, has now been appointed in the place of the late M. Perreyon as *chef pilote* at the Blériot school at Buc.

French Navy Has Another Voisin Canard.

AT Frejus, on Monday of last week, Rugere carried out the official tests with a new Voisin Canard which has just been delivered to the French Navy. Piloted by Mechanic Parfait, it made an hour's flight with a passenger at an average height of 800 metres, and was steered over the town.

Quick Climbing on a Ponnier.

TESTING one of the new Ponnier monoplanes at Rheims on Monday, Bielovucic climbed at the rate of 350 metres a minute with a normal load, which is claimed as being a record. The machine is fitted with a 60 h.p. Rhone motor and Chauviere propeller.

November at Johannisthal.

DURING last month flying was possible at Johannisthal on 28 days, and 132 pilots made 4,325 flights aggregating 450 hrs. 33 mins. Seventeen civilian pupils obtained certificates and 16 military pupils qualified.

Chanteloup in Holland.

QUEEN WILHELMINA having expressed a wish to see some upside-down flying, Chanteloup gave a special display on his Caudron biplane on Sunday afternoon at the Hague. He flew in a circle with the planes vertical, made an S dive, and then a double loop, followed by a triple loop. About 30,000 people were present on the flying ground. He gave similar demonstrations on the 3rd and 4th inst. at Groningen.

The Progress of Vedrines.

LEAVING Belgrade on the 3rd inst., Vedrines flew on his Blériot to Sofia, where, on the following day, he was received by King Ferdinand. He left Sofia on the 5th inst. for Constantinople.

Bonnier at Constantinople.

LEAVING Bucharest on the 2nd inst., Bonnier, on his Nieuport monoplane, arrived at Varna, from which point he flew on to Constantinople on the following day.

The Prince Henry Circuit.

IT has now been decided that the Prince Henry Circuit shall be held from May 17 to 25. On the first day a circuit will be made from Darmstadt, *via* Mannheim, Strasburg, Spire and Worms, and on the second day the competitors will go from Darmstadt to Frankfort by way of Mayence, Coblentz, and Cologne; the third stage will be by Cassel, Munster, and Hanover to Hamburg; the fourth to Cologne and back, and the last to Cologne where the military scouting tests will be held. There will be a day's rest between each stage.

St. Petersburg to Moscow and Back.

AN unsuccessful attempt was made by Wassilieff at the end of last month to win the Romanoff Cup, which calls for a flight from St. Petersburg to Moscow and back within 48 hours. Leaving St. Petersburg on his Morane-Saulnier monoplane on November 24th, at 9.44 a.m., Wassilieff flew 360 kiloms. to Bychny-Voletchek, and then had to stop until the next morning on account of the heavy snowstorms. The next day at 7.32 a.m. he restarted, and flew in 2 hrs. 20 mins. to Moscow, where he did not stop, but dropped a certificate as to his time of departure from St. Petersburg. He landed at Tver later, at 11.36, having covered about 450 kiloms. in a little over four hours. After replenishing fuel tanks, etc., he got away at 1.20, but after flying 190 kiloms. was in trouble with a frozen carburettor. Unfortunately he had to come down on very bad ground near Alechenka, and damaged the chassis. A new wheel arrived, and was fitted, but subsequent tyre trouble prevented further progress that day. Next morning the journey was resumed at 10.25 a.m., and at 12.53 p.m. the machine landed at St. Petersburg, but unfortunately the time taken for the full distance of 1,280 kiloms. exceeded the maximum time allowed.

Russian Aviator Drowned.

AFTER a long flight on a hydro-aeroplane, the Russian Lieut. Wachsmuth fell into the sea at Leban, and was drowned, on the 7th inst.

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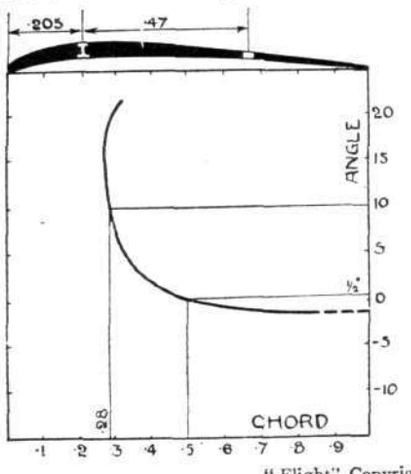
PROPORTIONATE LOAD CARRIED BY THE WING SPARS.

IN order to estimate the relative load carried by the front and rear spars of a wing it is necessary to test the wing (in model form) to obtain a graph of the travel of the c.p.



"Flight" Copyright.

Diagram illustrating the travel of the centre of pressure on the wing section, Blériot XI *bis*.

The c.p. curve for the much used Blériot XI. *bis* section is known, and is given in the diagram. Superimposed on the same diagram is a section of the wing showing the position of the spars.

It is then necessary to determine the range of flight speeds of which the machine is capable, and to express those limits in terms of the angles of incidence assumed by the wing.

For instance, suppose the low speed limit is flown at 10° incidence, and the fast speed limit at ½° incidence. When flying fast the c.p. is half way along the chord; when flying slow it is ·28 of the chord from the leading edge.

The positions of the spars are indicated in the diagram, and the loads carried by each are as follows:—

Load on front spar at 10°.

Distance between spars = ·47
Distance of c.p. from rear spar = (·675 − ·28)
= ·395

∴ load on front spar = $\frac{·395}{·47}$ = 84 per cent.

Load on rear spar at ½°.

Distance between spars = ·47
Distance of c.p. from front spar = (·5 − ·205)
= ·295

∴ load on rear spar = $\frac{·295}{·47}$ = 63 per cent.

Models

Edited by V. E. JOHNSON, M.A.

The Birmingham Aero Club's Gliders.

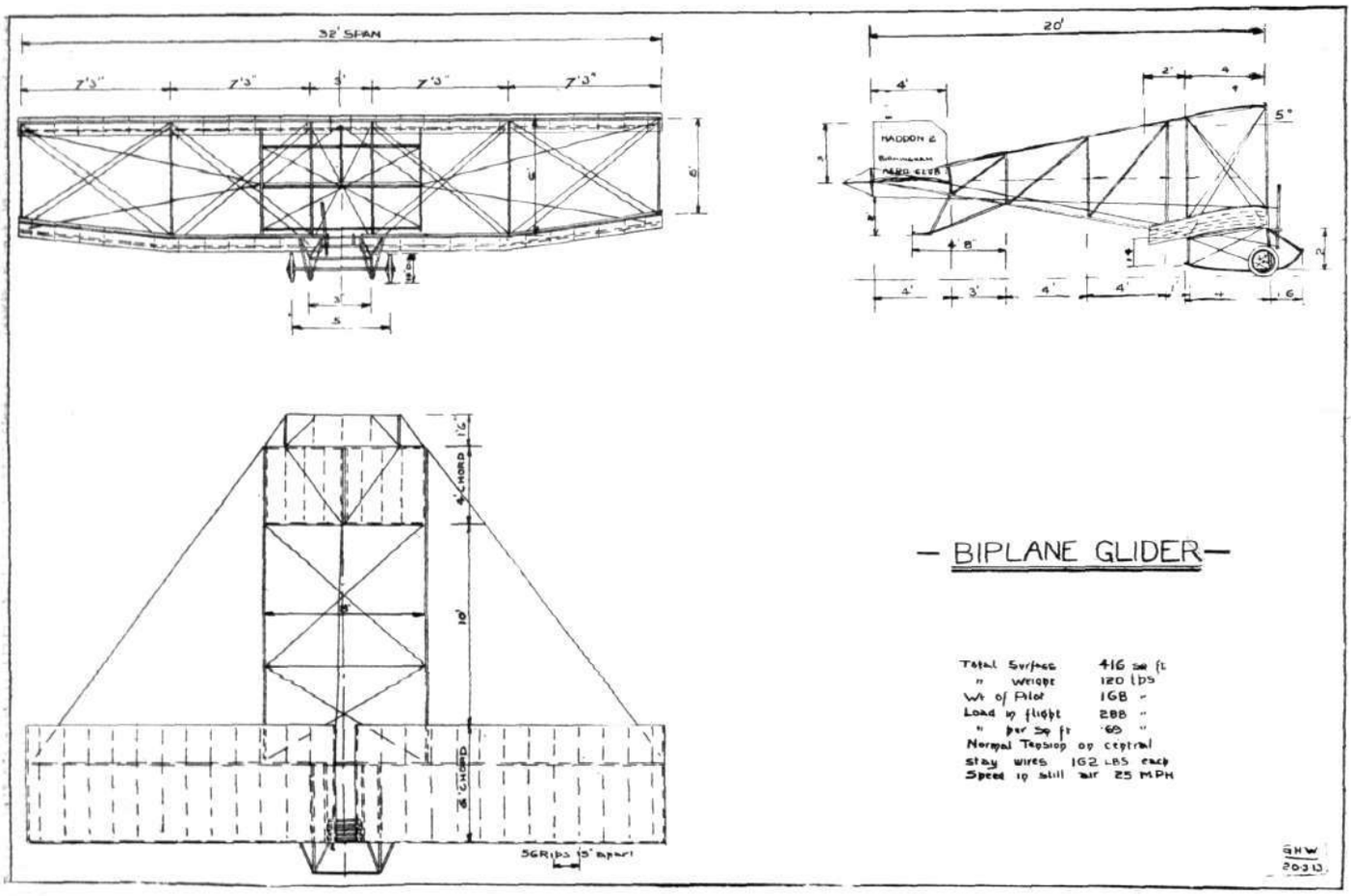
We have much pleasure in publishing the following very interesting account of a number of man-carrying gliders, built by members of the above club, kindly sent us by Mr. G. Haddon Wood, the Hon. Secretary :—

"The first one," says Mr. Wood, "of which I have any trace was a small monoplane glider, built by Mr. J. H. Elee (a carpenter), during November, 1909. It was tried down a hill at Sutton Park, but was not a success, owing principally to its small surface. In the early part of 1910, Mr. Maynard, a late member of this club, built a Chanute-type glider, which was unfortunately smashed through colliding with a tree whilst being towed, without a passenger. Some good results with a half-sized monoplane glider were obtained by Mr. Ernest Noble about May, 1910, but I have not any record of his experiments. Another member, Mr. Frank Warren, built a similar type glider in October, 1911, but, unfortunately, it was smashed up by a gale when erected in his garden, before any trial flights had been made.

"An extremely interesting elevator in front monoplane glider was built by Mr. R. Platts in March, 1911. The total weight was only 70 lbs., the surface 222 sq. ft. All joints were made by binding with tape and gluing, the material being bamboo; thick copper wire joints were employed in some places quite successfully. No bracing wires were used, the planes being trussed with bamboo spars. No passenger flights were made with this glider owing to its small surface, but some very good free and towed flights were obtained without passengers. After, comparatively speaking, quite a long life, it was smashed when left in a field, owing to a gale suddenly springing up in October, 1911. A very successful glider was built by Mr. E. Prosser (the present aviator) and Mr. A. M. Bonehill, in August, 1910. This was again of the Chanute type, and some good towed passenger flights were made. This was wrecked in the same way as the first 'Haddon' glider, on August 26th, 1911.

"A monoplane glider was built in 1911 by the Belmont Aeroplane Co., and designed by Mr. F. Hill at the club rooms, but was afterwards turned into a hydroplane [aeroplane?] with a low-powered engine. This machine had no front or rear elevator, and the planes tapered to a point at the tips with a chord of 12 ft. at the centre and a span of 40 ft. Models of this glider flew exceptionally well, but up to the present it has not met with any great success either as a glider or aeroplane. A half-sized Blériot type glider was built last year by two of the junior members of the club, and some most useful experiments were made with the same.

"My first glider, 'Haddon I,' was commenced in the beginning of 1911, and was constructed throughout of red deal, a wood which was found very suitable owing to its freedom from knots. Most of the joints were first made with chrome leather, and were bound with twine waxed with cobbler's wax, and afterwards glued over. These joints were quite satisfactory in some places, but metal plates had to be substituted for them in some parts especially subjected to side strains. The wires were tightened by means of the strainer shown in the sketch. These have been used on all our gliders since with every satisfaction; their cost is quite small.



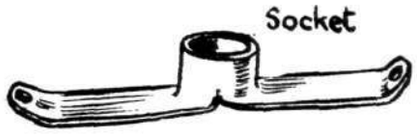
"The ribs were built up, the method being to place them on a jig, which consisted of a flat board with screws in position so as to hold the ribs to the exact camber required, whilst the blocks, which had previously been cut to a gauge on a circular saw, were screwed into position. The rib was then taken off the jig ready for fixing to the spars.

"Ordinary calico at 3*d.* a yard was used as a fabric, and was found quite satisfactory for gliding purposes, the same price being paid for the calico on all our later gliders. The following is the cost of 'Haddon No. 1': Wood, 14*s.* 8*d.*; fabric, £1 2*s.* 3*d.*; sundries, £1 9*s.* 8*d.*; total, £3 6*s.* 7*d.*

"Some good free glides were made at Handsworth. Afterwards it was taken to the club ground, now at Billesley, and after about three weeks there was smashed whilst being towed with a passenger,

owing to a side-slip and consequent dive from a height of some 40 ft. Luckily no one was hurt.

"The following extract from a letter of mine which appeared in the *Aero* in December, 1911, may be worth repeating, since it contains my deductions made at the time, and which I still hold, except for one or two modifications. First, I believe that towed flight is dangerous unless the ropes are in the hands of experienced towers, and also attached at the correct places. These positions, in my opinion, are at the two front end corners of the main planes,



with a rope on the elevator if the pilot has no control over the same. The ropes should at first not have a greater length than 10 ft to 15 ft. in order to prevent the machine from rising too high. For should the pilot suddenly find himself taken up alone to a height of 30 or 40 ft. for the first time, it is enough to cause him to lose control, as indeed actually happened in the case of 'Haddon I.'

"With regard to free flight, I have come to the conclusion that for use on the hill which we have on the Birmingham Aero Club grounds, a glider with a loading of not more than ¾ lb. per sq. ft. is necessary in order to obtain free flights of any length.

"The loading of 'Haddon I' was about 1 lb. per sq. ft., and its gliding angle was equal to the steepest part of the hill, which is about 1 in 7, so that a free glide of more than 40 yards was not possible with a heavy pilot, say, of 12 stone.

"Mr. Trykle was the next to complete a glider. This was built entirely of bamboo, and the fabric was proofed with gold size, which is not, however, either so cheap or so satisfactory as *boiled* linseed oil.

"It was of a similar type to the club glider, with the exception that the bottom plane was only 20 ft. span and the top plane had upturned tips. Some good towed flights were made with it, although it was slightly tail heavy, except in a good wind.

"About this time (January, 1912) my second glider, 'Haddon No. 2,' was completed. This was also constructed of bamboo, and some very good towed flights were obtained. Three ropes were used for towing, a centre rope and a rope attached to each front end corner of the bottom plane. All the towers were on the centre rope, and one at each end to steady the glider laterally. No free flights of any account were made except when the glider overtook the towers, which it did on several occasions, these times being rather exciting, since the towers had on such occasions great difficulty in getting out of the way when the glider was landing. This glider was eventually smashed in a gale in November last year. At the beginning of this year the club glider was built from the remains of this and Mr. Trykle's glider. This again was constructed of bamboo, and was single-surfaced and covered with calico proofed with boiled linseed oil.

"None of the bamboo gliders with single-surfaced planes had so great a lift as the first Haddon glider, built of red deal and fitted with correctly cambered, double-surfaced planes. The plane section was approximately Philips' entry, but with a less pronounced dipping front edge.

"Below I tabulate as accurately as possible the difference between the two Haddon gliders :—

Glider.	Span.	Chord.	Surface.	Camber.	Weight, approx.	Load per sq. ft.	Speed, approx.
Wood...	34 ft.	4 ft.	292 sq. ft.	Double	130	·97 lb.	25
Bamboo	32 ,,	6 ,,	416 ,,	Single	120	·69 ,,	25

"The sockets for the bamboo glider were made by slotting a stout gauge weldless steel tube, and bending as shown in the sketch. These were bound on to the bamboo spars with stay tape, and then painted over with white paint.

"We have found that for a glider which is left in the open, this is the best thing that can be used, since it protects and holds the tape well together, and will not wash off in the rain like glue. We have also found that if bamboo spars are painted over they will not crack, however long the machine be left in the open. The ribs were constructed by being heated over a gas flame and then bent on a template. To save shocks on landing, which were sometimes heavy, we used a suspended swing seat, in which it was possible for the pilot to drop on to his feet before the glider, and so take the strain off the chassis. This was found to be quite successful with a few, but the less agile members preferred to stop in the seat and take the bump that way.

"A monoplane glider has now just been completed by one of our members, Mr. N. Stamps. It is of the Blériot type, and is a very neat machine, and some good results should be obtained from it; all controls are fitted. Bamboo is the material used, and the chief dimensions are: Span, 30 ft.; chord, 7 ft.; length, 20 ft.

"From the experience obtained with all the previous gliders, we have come to the conclusion, that it is worth the extra trouble and expense to build a glider of wood with double-surfaced planes, covered with calico, and proofed with boiled linseed oil, and to fit all controls. Should I build another glider, it would be constructed chiefly of red deal and ash, with joints of the steel plate type, these being the easiest and strongest to manufacture with the tools at the disposal of the average club. I should use planes having a span of 30 ft., a chord of 5 ft., a gap between the planes of 5 ft., and an overall length of 20 ft. I should also use a rear elevator. With reference to your suggestions for us to try a propeller on our glider, we should only be too pleased to do so, if you will let us have full particulars. I have consulted Mr. Stamps, and he would also be very pleased to try your propeller on his glider."

[The propeller used by me is not mine, but was lent me by Messrs. J. Bonn and Co., 97, New Oxford Street, or I should only be too pleased to lend it to Mr. Stamps. There must be about the country a number of disused propellers of some 3 to 5 ft. diameter which their owners would only be too glad to see put to some use. Will any reader having such kindly offer the use of the same to the above club? The diameter of the propeller should not, in my opinion, be *less* than 4 ft. or greater than 6 ft. Personally I should choose a large diameter and rather fine pitch.—V. E. J.]

The International Aero Show at Olympia.

Several correspondents have written asking for further information and particulars with respect to certain points in the Model Section. Will all such kindly address their communications *direct* to Mr. W. H. Akehurst, 27, Victory Road, Wimbledon, S.W.?

KITE AND MODEL AEROPLANE ASSOCIATION.

Official Notices.

British Model Records.

Single screw, hand-launched	Duration	D. Driver...	...	85 secs.
Twin screw, do.	Distance	R. Lucas ...	...	590 yards.
	Duration	G. Hayden	...	137 secs.
Single screw, rise off ground	Distance	W. E. Evans	...	290 yards.
	Duration	W. E. Evans	...	64 secs.
Twin screw, do.	Distance	L. H. Slatter	...	365 yards.
	Duration	J. E. Louch	...	2 mins. 49 secs.
Single-tractor screw, hand-launched	Distance	C. C. Dutton	...	266 yards.
	Duration	J. E. Louch	...	91 secs
Do., off-ground	Distance	C. C. Dutton	...	190 yards.
	Duration	J. E. Louch	...	94 secs.
Single screw hydro., off-water	Duration	L. H. Slatter	...	35 secs.
Single-tractor, do., do.	Duration	C. C. Dutton	...	29 secs.
Twin screw, do., do.	Duration	L. H. Slatter	...	60 secs.

Aero Exhibition.—The official notices of the model section of this Exhibition were published in the model section last week. Secretaries and members will have the forms sent them as soon as possible, but any reader who does not belong to a club should, if he wishes to enter, send his address to the Hon. Secretary, who will forward forms.

Handicap Competition.—A sealed handicap model duration competition will be held on Wimbledon Common on Saturday, Dec. 20th, starting at 2.30 sharp. Rules: 1. Competitors must be at the judges' flag at 2.15 sharp. 2. Models must weigh not less than 6 ozs. 3. Entrance fee 6*d*., to be sent with entry, and a further 6*d*. to be paid by starters on the ground. Prizes will be awarded according to the number of entries. Entries close on the 16th, any received after that date will be returned. This has been arranged at the request of several members, and the Hon. Sec. hopes that a good entry will be the result, so that the rules committee can judge if it is worth while running these next season.

Inter-Club Contest for the McClean Medals.—It has been announced that Mr. F. K. McClean, A.F.Ae.S., has kindly offered medals for the contest to the winners and runners-up. The secretaries and council have met and discussed the matter, and have decided as follows: That the competition be open to affiliated clubs showing at the Aero Exhibition. That the test be confined to Class 2A. That the team making the best aggregate number of marks shall be the winners, the first six of a club to count. The average number of marks in duration and stability will be taken. For the teams' guidance the stability marks will be awarded for evenness of the path of flight. All teams entering for this should at once notify the Hon. Secretary.

Affiliation.—All applications for affiliation should be sent in at once, and it is hoped that all clubs of any standing will join, so that the Modellists shall become more united, and work together. Also all affiliated clubs will have a special reduction made in the case of collective exhibits.

27, Victory Road, Wimbledon. W. H. AKEHURST, Hon. Sec

AFFILIATED MODEL CLUBS DIARY.

CLUB reports of chief work done will be published monthly for the future. Secretaries' reports, to be included, must reach the Editor on the last Monday in each month.

Aero-Models Assoc. (N. Branch) (25, CHURCH CRESCENT, MUSWELL HILL, N.).

DEC. 13TH, handicap duration competition, 3 o'clock sharp. Dec. 14th, practice, 10 a.m. and 3 p.m. Dec. 18th, special general meeting at the Cabin, 8 o'clock. Important business. Dec. 20th, hand-launched tractor competition.

Leytonstone and District Aero Club (64, LEYSPRING ROAD).
DEC. 14TH, flying, 10 a.m., on Wanstead Flats; if wet, meet at clubroom. Dec. 18th, at 8 p.m., demonstration at clubroom. Subject: "Useful Hints."

Paddington and Districts (77, SWINDERBY ROAD, WEMBLEY).
SATURDAY, Dec. 13th, flying at Sudbury, r.o.g. handicap.

Sheffield Ae.C. (50, SPRINGHOUSE RD., WALKLEY, SHEFFIELD).
SPECIAL attention is drawn to all members of change of address, as above. All please observe rule 4, re subscriptions. Entries for tractor biplane competition to be in by Dec. 21st, 8 p.m., latest.

Wimbledon and District (165, HOLLAND ROAD, W.).
DEC. 13TH and 14th, flying as usual.

UNAFFILIATED CLUBS.

Finsbury and District (85, UPPER TOLLINGTON PARK, N.).
DEC. 13TH, flying, 3 p.m., Finsbury Park, N.

S. Eastern Model Ae.C. (1, RAILWAY APPROACH, BROCKLEY).
DEC. 13TH, flying, Woolwich Common, 3 p.m. to dusk. 14th, Blackheath, 7.30 to 10 a.m. Exhibits for the first annual exhibition must be ready by the end of this month.

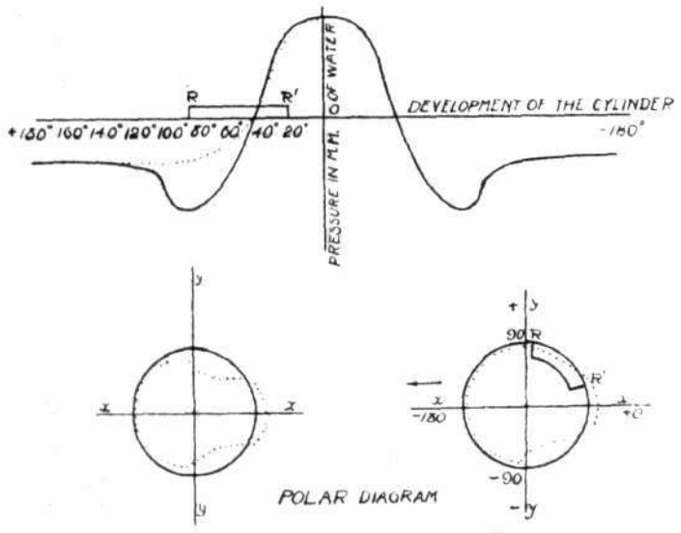
CORRESPONDENCE.

[1815] Owing to my absence from England, I have only to-day seen my communication in FLIGHT, which you kindly translated and published.

There is, however, one point which I wish to make clearer, and that is, that it is not the lines of force which emanate from the sun which I mentioned, but the action of the solar light as the agent causing the lines of force to come from the soil and sub-soil.

On reading the article with which you preceded my communication, I am of the opinion that the way in which my conclusions were put was not sufficiently explicit, as it may be thought that I was engaged on the study of the direct action of a field of influence on the machine without determining how this action was produced, and what phenomena resulted from it.

The phenomenon of which I wish to speak, and which I observe on a machine in flight due to this field of influence, is one of *a greater adherence of the air on the supporting surfaces* or the



CASE I.	CASE II.
$x = A(93{\cdot}78 + 93{\cdot}78)$.	$x = A(98 + 93{\cdot}78)$.
$y = A(96{\cdot}4 - 96{\cdot}4) = 0$.	$y = A(65 - 96{\cdot}4) = -31{\cdot}4A$.

The portion RR^1 is the part which has been roughened. It should be noted how much the absolute values of the depressions within these points are reduced.

In Case II we have now an appreciable component on the axis of y in the negative sense, corresponding in a wing to a very great diminution of the supporting force compared with the resistance to forward motion which is a little increased.

controlling organs (wings, empennages, elevators, &c.). This phenomenon bears a striking resemblance to the one discovered by Monsieur Lafay when he was engaged on his interesting experiments on "L'Aérodynamique du Cylindre."

The enclosed sketches will recall the results which he obtained by varying the positions of a rough surface. The phenomenon which I observe is of a precisely similar nature, that is to say, its influence is felt particularly on those parts of the machine on which the air is working under depression (upper surfaces of the wings, empennage, &c.).

It is with this phenomenon of changes in the values of depression and of displacement of the centres of pressure that I now wish to deal.

In an ordinary way, when designing a machine, the controlling organs are placed in a certain relation to the three principal axes of the ellipsoid of inertia of the machine. Moreover, by knowing the variations of the centres of pressure and the increases of the forces, due solely to the air impinging at a different angle, the planes of application of the forces are determined. By then bringing together the centre of gravity and the point of contact of a plane tangent to the ellipsoid of inertia and parallel to a plane of the forces, the instantaneous axis of rotation of the machine is obtained.

Knowing this axis and the intensity of the forces, the value of the directional organs is combined in order to be always capable of correcting the forces acting on the corresponding axis of inertia.

The phenomenon, to which I wish to draw your attention, compels us to endeavour to determine fresh axes of rotation, and therefore at this moment to produce unlooked-for efforts by means of the controls.

When one of the wings of the machine enters the field of influence, its supporting power is enormously reduced, with the result that it imparts a sudden rotary movement to the flying machine. This phenomenon may occur on the whole supporting surface, in which case the machine then falls; or it may occur on the rear empennage, the machine then rising.

As, however, the organ of control is itself affected by the field of influence, the value of the corrections is excessively small, or even without any effect.

On account of this phenomenon I wrote my treatise on the relations existing between electro-optics and aviation.

Trusting that you will be good enough to consider the question from this point of view.

Bristol, November 25th. HENRI COANDA.

Emaillite in the Making.

ONE day last week we were afforded the opportunity of inspecting the British Emaillite works at Shepherd's Bush, and from the careful methods adopted we can readily understand why this dope has been so successful and finds such favour among aeroplane manufacturers. The works are not only very well organised, but are equipped with electric motors which are used for the mixing of the various ingredients, a process over which extreme care is taken, and which occupies several hours for each batch of dope.

Standing ready were a large number of empty casks and carboys waiting to be filled with the six different grades of this popular dope prior to despatch to various users. Judging by the long line of these, and the empty drums and casks of all sizes of "empties" waiting to be returned to their respective firms, which had been cleared out of their various ingredients employed in the manufacture of Emaillite, it was evident that this well-known dope has steadily gained a permanent place in the industry. Moreover, the many orders in hand for various manufacturers incidentally is very encouraging as showing the great amount of aeroplane building which is going on in this country at the present time.

Success on Shell Spirit.

THE extraordinary speed variation records made at the Royal Aircraft Factory, Farnborough, with the 80 h.p. Sopwith tractor biplane, referred to last week, were accomplished with the aid of Shell motor spirit.

Aeronautical Patents Published.

Applied for in 1912.
Published December 11th, 1913.

26,108. A. HOWE. — MOORE AND — BARROW. Aerial craft.
26,921. H. COANDA AND BRITISH AND COLONIAL AEROPLANE CO Aeroplanes.
27,698. E. L. LAUR. Aeroplane propellers.

Applied for in 1913
Published December 11th, 1913.

1,992. F. E. PIANA CANOVA. Aerial machines.
3,471. H. T. ALESBURY. Automatic control for aerial machines.
11,475. CHRISTMAS AEROPLANE CO. Aeroplanes.
11,999. S. TSCHERWINSKY. Flying machines.
16,943. G. PRENSEIL. Life-saving parachute apparatus.

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